Railway Age Gazette

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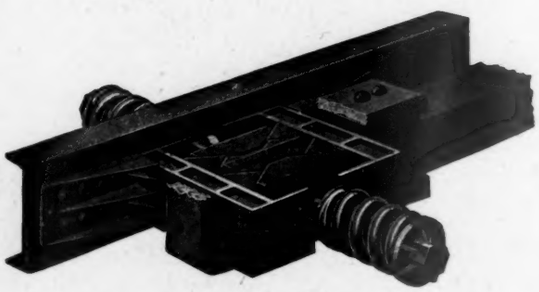

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Support the Road Foremen of Engines

The road foreman of engines has been designated as "the eyes of the mechanical department," inasmuch as he is called upon to keep the mechanical department informed regarding the performance of power and to report defective locomotives so that they may be repaired promptly. This is one of the important duties of this officer, but in too many cases the mechanical department fails to use its "eyes" and disregards the recommendations of the road foremen. The importance of well maintained power at the present time is so obvious that no argument is necessary. It means that more tonnage can be hauled, that less fuel will be used and that the railways will be serving the country with greater efficiency. There is nothing more discouraging to any one than to see his best efforts wasted or disregarded. The road foremen should be made to feel that their efforts are appreciated and that they are performing an important function in our transportation system, not by kind words and pretty compliments, but by action—by putting into effect their suggestions.

Deterioration of Coal During Storage

Railroads have always hesitated to store coal on account of the supposed deterioration in the calorific value. The actual extent of this has been definitely settled by a report on the deterioration in the heating value of coal during storage, published as bulletin No. 136 of the Bureau of Mines. Except for the sub-bituminous Wyoming coal, no loss in the heating value of the fuel tested was greater than 1.2 per cent in the first year or 2.1 per cent in two years. Under-water storage tests made with New River and Pittsburgh coals showed practically no loss in calorific value. The New River coal when stored in the air under severe conditions showed a heat loss of about one per cent in one year, two per cent in two years, reaching two and a half to three per cent in five years. The open air storage of Pittsburgh coal developed practically no deterioration during the first year. This increased slowly until at the end of five years the deterioration was 1.1 per cent. The Wyoming sub-bituminous coal, which is known as black lignite, deteriorates rapidly in storage, particularly by slacking. However, by the use of bins with air tight bottoms and sides and a protecting layer of fine slag on top of the coal, the heat loss of this coal in storage can probably be kept below three per cent in one year and the physical deterioration can also be largely prevented. The results of these investigations, which were made by experts, Horace C. Porter and F. K. Ovitz, show that the loss in calorific value of fuel in storage has been overestimated. The loss in most coals, such as New River and Pittsburgh, is so slight that the expense of underwater storage equipment would not be justified except to prevent fires from spontaneous combustion.

Sailing Days for Freight Cars

The establishment of "sailing days" for the despatch of merchandise cars from large freight stations, reducing by 50 per cent or more the number of cars needed for some services, bids fair to be an effective means of permanent economy; and, as a rule, shippers seem to be disposed to co-operate with the railroads to make the scheme a quick success; but, as with almost everything connected with freight transportation, there are innumerable details to be attended to. At Philadelphia some revisions of schedules have been found necessary already; and at New York the date for starting the plan has been further postponed because of the necessity of additional conferences to adjust it to the needs of the many thousands of shippers. In Massachusetts and Rhode Island it was to have gone into effect on the 10th of October but there the notice is suspended because of the shippers' fear that rival cities will be favored. And it may very well be that these fears are reasonable, although founded on a claim that is based on no real grievance. For example, a retail merchant midway between Boston and Providence or Worcester, will be told that he can have his freight shipped from the smaller city only on Tuesdays or Fridays, whereas at Boston there is no such restriction. The shipper at Boston can get a receipt on Wednesday as well as on Friday. But in the congestion which has prevailed during the past six months the actual date of arrival of two such shipments was, very likely, the same from both cities. The bill of lading issued at Boston *seemed* to be a promise to get the goods to destination two days earlier than the shipment from Providence

(or Worcester) but in reality it did not always carry out such promise. However, the retailer's confidence in a promise like this, whether well-founded or ill-founded, is sufficient to lead him to complain of neglect at the rival city; and the wholesaler who ships from there must, in self-defense, demand that cars shall be sent out no oftener from Boston than from his town. An agreement acceptable to all can without doubt be arranged if everybody has the requisite patience. In the case of many routes, where freight has to be transferred en route from one car to another, shippers will find a very direct self interest, not only in accepting, but in urging a scheme in which the sailing days shall be full car loads always. Meantime, the vitally important fact for all to bear in mind is that the wasteful use of cars must be stopped; for unless the greatest practicable use is made of each car, there would not be enough cars to fill the demand on "sailing days" regardless of how the "sailing days" are arranged.

THE IRRESPONSIBLE AGITATION ABOUT RAILWAYS

IT is remarkable how much attention can be attracted sometimes by utterances on important questions made by men who don't know a thing about the questions discussed. Recently a statement was issued in Washington and published in newspapers throughout the country, in which the prediction was made that the exigencies of war may force government ownership of railways in the "surprisingly near future." This prediction was attributed to an anonymous "Conference Committee on National Preparedness." The pretentious name used was adapted to convey the impression, and evidently did convey it to many people, that the "committee" spoke with knowledge, if not, indeed, with some kind of official authority. It added that "the whole transportation system of America is bending and may break under the strain of our first year in war"; and it advanced a lot of half baked suggestions concerning methods which it thought the railroads ought to adopt in order to increase their efficiency.

The *Railway Age Gazette* has tried to find out the personnel of the "Conference Committee on National Preparedness." We learn that its chairman is Henry A. Wise Wood, a manufacturer of printing machinery in New York. Of course, a manufacturer of printing machinery is just the man to know all about the railway situation and to go down to Washington and enlighten the public about it. The secretary is J. E. Clark. We never heard of him before, and therefore, cannot say whether or not he is as well qualified as Mr. Henry A. Wise Wood to discuss the railway situation. The treasurer is R. B. Price, who, apparently is, or formerly was connected with a large rubber company. Experience in the rubber business, it is needless to say, is the one thing which a man needs to give him intimate and thorough knowledge of railway matters.

One of the best answers which can be made to the apprehensions expressed by this self-ordained and self-constituted committee of amateur saviours of the country was contained in the remarks of Chairman Hall of the Interstate Commerce Commission before the National Association of Railway and Public Utility Commissioners in Washington last week. Mr. Hall said: The power to commandeer the carriers by rail has not been exercised. So harmoniously have all who have to do with the problem of transportation by rail put their labors together that the President has not seen the need of exercising that great power that was placed in him." He also said that the Interstate Commerce Commission has not found it necessary to exercise the power over car service given it by the Esch bill because "the railroads were prompt to recognize the demands upon them. They did the unprecedented. . . . If the carriers had been standing upon their rights, if they had been calling upon this commission under its powers conferred by the Esch bill to put out orders with regard to the movement of cars; if there had been a reluctant compliance with the orders of authority, there never would have been produced such a result as has been produced by the cheerful, hearty and willing acting together of the shippers and carriers of the country." In other words, Chairman Hall expressed the belief that the voluntary efforts of the railway managers and the shippers to increase the efficiency of railway operation are producing better results than could be produced by the exercise of governmental authority. Chairman Hall and the "Committee on National Preparedness" differ so much because Chairman Hall knows what he is talking about and the committee does not.

IMPORTANCE OF THE MARCH CONVENTION AND EXHIBIT

THE successful convention of the American Railway Bridge and Building Association in Chicago last week, following that of the Roadmasters' Association a month ago, gives further emphasis to the advisability of proceeding with the American Railway Engineering Association convention next March, as pointed out editorially in these columns four weeks ago. Not only did the registration of members at the Bridge and Building convention equal the highest record in the history of the Association, but the attendance at the various sessions was the largest ever recorded, while the discussions were spirited and intensely practical in character.

A large part of the success of these meetings resulted from the revision of the program to meet present problems, many of which have arisen during the last six months. Without this revision there is no question but that the interest would have been less and the attendance smaller. Although some of the committees had done a considerable amount of work on subjects which were superseded by more timely topics, there has been no criticism of this action on the part of the committees or others.

It is important that the American Railway Engineering Association take similar steps. The success of the next convention will depend in large measure on the extent to which the Board of Direction meets the present situation by arranging a program which will provide for a full discussion of the engineering and maintenance problems which are presented by conditions due to the war. Although no definite statement has yet been issued regarding the convention, it is assumed that it will be held as usual. Past conventions have been held on the theory that they contribute to railway efficiency. But never was efficiency in all branches of railway service so vitally needed as it is now. Therefore, either the reason assigned for holding the convention before was a mere subterfuge, or there is the strongest reason that ever existed for holding it next March.

The same reasoning applies to the exhibits of the National Railway Appliances' Association. The manufacturers participating in these exhibits have spent large amounts of time and of money in their preparation in previous years and railway men have visited the Coliseum in large numbers. Was there ever a time when railway men so much needed information regarding devices that would increase efficiency in every direction, and especially that would save labor, as is the case now? Manifestly, to refrain from holding the exhibit this year would be to say, in effect, that such exhibits are of no value, and that the time and money which have been spent on them in the past have been wasted.

While from the standpoint of the individual members of the Appliances Association, the exhibit is a business proposition, and is a step in the selling of their materials to the railways, it is, as a whole, of great educational value to railway men. If the National Railway Appliances Association

was ever justified in emphasizing the educational value of its exhibit and urging the railways to send their men to visit it, this is the time of all times when it is justified in doing so.

All classes of manufacturers of railway supplies used in the maintenance of way department should unite in making this exhibit the most successful ever held. The exhibit should be made such as will give railway men the most practical information—information which will be of direct service to them in meeting the problems which are now immediately confronting them. Some companies which are now crowded with business, believe that it would be unwise to devote even a small part of the facilities of their plants to the preparation of devices especially for exhibit, and they feel, therefore, that they should not be represented. We agree with them that they should not transfer any of their forces from the manufacture of equipment urgently needed by the railways, but we also believe that a particularly interesting and practical exhibit can be made by the judicious selection of equipment on its way from the factory to the roads. Furthermore, the members of the National Railway Appliances Association owe it to the railway men who have supported the exhibit by their attendance in previous years, to give special prominence to all devices which will tend to save labor, as this is the livest problem now confronting railroad men.

Although some members of each association believe that the meeting should not be held this year, we believe that it is highly important that both associations proceed with their meetings as usual, revising their programs and their exhibits to meet present day conditions. The National Railway Appliances Association has already issued a statement to the effect that the exhibit will be held and its members should stand back of the organization unitedly to make it of the greatest possible value to the railways and thereby to themselves.

NOW COMES THE REAL TUG OF WAR

THE railways have now entered the period when they will have the greatest difficulty they have ever experienced in handling the available traffic. Within the last eighteen months, and more especially within the last six months, they have increased the efficiency with which they operate their facilities to an extent which two years ago would have been declared impossible. In July, the latest month for which complete statistics are available, they hauled 17½ per cent more ton-miles with each freight car and almost 10 per cent more ton-miles with each freight locomotive than they did in July, 1916. They handled not far from 50 per cent more traffic with each car and each locomotive than they did in the same month two years ago. This remarkable increase in efficiency has been maintained and even augmented up to the present time. But the unprecedented increase of traffic which began about two years ago continues unabated. The roads are handling at the present time not only a heavier passenger and freight traffic than they ever did in any previous year, but also a much heavier total traffic than they have at any previous time in 1917. Furthermore, the indications are that this growth of business will continue unabated for some months. The movement of traffic in the fall and winter months is normally heavier than at any other time of the year, and in spite of the enormous business which has been handled thus far in 1917, the present year promises to be no exception to the usual rule.

The effect of this steady and enormous growth of traffic at a time when, owing to numerous conditions, the railways are prevented from increasing their facilities, is shown by the fact that on October 1 the net car shortage suddenly increased to over 70,000 cars. This is less than half as large as it was last May. But within the next few weeks the traffic undoubtedly will greatly further increase; and as general transportation conditions probably will grow more and more unfavorable, it is evident that the time has come when the Railroads' War Board, the managements of the individual railways, railway employees, the shipping and receiving public, and those having charge of shipments for the government must put forth an effort approaching the superhuman if the railways are to be enabled to handle all the traffic available. As a result of the severe and unremitting service to which cars and locomotives have been put for over two years, they are not in satisfactory condition. The same thing may be said of track and other facilities. The railways have lost many employees who have voluntarily enlisted in the army, who have been taken for the citizen army, or who have found more profitable employment in other lines of work. In consequence, they have not now, and cannot get, as many competent employees as they had two years ago, or even a year ago. The weather up to the present time has been highly favorable to efficient operation, but in a short time the annual battle with snow, ice and cold will have to be fought; and then the difficulty of getting the greatest efficiency from equipment will reach the maximum.

One thing which is going to add greatly to the difficulties of the roads for some weeks is the fact that this year's crops, which are now moving, are unusually large. The effect of this is indicated by loud and general complaints of lack of sufficient box cars, which are coming in from all over the central and middle western states. The traffic situation is also going to be aggravated by the labor troubles in the coal mines which have been chronic in central territory for some weeks and which became acute recently in the Illinois field, where most of the mines were closed by a strike. There has never been a time since the middle of August when the railways in a large part of this territory have not been able to furnish more coal cars than there was a demand for. The recent strike in the mines in Illinois has greatly delayed the shipment of coal from the mines of that state. The result is going to be that during the next month or two the railways, and especially those of Illinois, will be called upon to handle a large amount of coal which they ought to have been given opportunity to move weeks ago. It is probable that when this delayed coal movement begins there will speedily develop a serious shortage of coal cars in place of the surplus which recently has existed. Let us hope that the public will take all such facts into consideration while the transportation situation is growing worse, as it probably will be for some weeks to come, and that it will be patient with the railways and give them the utmost co-operation while they are working out their great problem.

If we may judge by past experience, the developments of the next few weeks will pretty definitely determine how successful the railways are going to be in handling the country's traffic during the war. There seems good reason for believing that we are approaching the very peak of the war time freight movement, and that, while there may be no considerable decline of traffic for some months, there will not be a continuance beyond the present winter of such enormous increases in it as have occurred without a pause for many months. If the railways can handle the business until say, March 1, 1918, in a reasonably satisfactory way, the country may safely consider that its transportation problem during the war is solved, unless the struggle shall last so long as to cause the railways to go to pieces physically from the accumulation of deferred maintenance. In our opinion, the real tug of war in the transportation field is going to take place during the next three or four months; and we are confident that if the railways continue to receive the co-operation of the regulating authorities and the shipping public they will stand this crucial test of their efficiency in a way that will merit and will receive the commendation of the nation.

SOCIETY OF RAILWAY FINANCIAL OFFICERS

IN a way the Society of Railway Financial Officers has come to a mile post in its progress. Like most other associations of railroad officers, its primary object has been the adoption of standardized methods of work which will lead to more economical practices. One principal subject to which it has devoted its attention is the universal adoption of the short form voucher. It is hard for anyone not actually engaged in the work of the treasurer's office of a railroad to realize how great in the aggregate is the waste of labor involved in handling irregularly shaped, needlessly long and complicated vouchers which formerly required not only the payee's signature to the voucher, but also a receipt. Through the efforts of the Society of Railway Financial Officers, the requirements for receipt have been almost entirely done away with and a great majority of the more important roads have adopted a short form voucher of standard size which requires a minimum of labor in preparation and in payment.

For some years the society, principally through the efforts of T. H. B. McKnight, treasurer of the Pennsylvania Lines West of Pittsburgh, has been preaching the gospel of the adoption of a clearing house for inter-railroad accounts. The general scope of this clearing house has already been described in the *Railway Age Gazette* and a concise, clear statement of the outlines of the plan and the aims to be accomplished were contained in an address made by Mr. McKnight before the American Association of Railway Accounting Officers published in the *Railway Age Gazette* of June 29, 1917. The plan has been blocked largely through the opposition of the accounting officers. It offers obvious economies and at this particular time ought to be and apparently is going to be given consideration by the railroad executives. In a short discussion which took place at the annual convention of the Society of Railway Financial Officers (a report of the meeting is contained elsewhere in this issue) certain points were made clear and certain points still left obscure.

As concisely as possible, the proposed clearing house would accomplish the following: At present a separate draft is drawn against each road with which any individual road has dealings for the amount due for per diem, car repairs, etc., and a separate check is sent by each road to every other road with which it has dealings in settlement of drafts drawn against it. In other words, not only does each road settle with each other road separately for each account, but it both draws a draft against each other road for amounts due it and makes out a check covering amounts which it owes. The clearing house would receive from each road a memorandum of the agreed on debits and credits against each other road, put these all together and draw a draft against or send a check to each road for its net debit or credit balance. Each treasurer's office, therefore, would each month pay a single draft drawn by the clearing house or receive a single check made by the clearing house, whereas now thousands of drafts are drawn and thousands of checks issued.

Some discussion was had as to the amount of saving that would be effected in the accounting department. If the clearing house plan is properly understood this is a question which is not open to difference of opinion. In so far as the preparation of bills due by other roads is concerned, the accounting and determination of the amount of these bills and the checking up and verification of other roads' bills against the home road, there would be no saving by the adoption of the clearing house plan. As it is now, however, the settlement of each debit and each credit against each road for each account is the subject of a separate ledger entry. Under the clearing house plan there would be a single entry only in the ledger, that dealing with the settlement to or by the clearing house. In other words, up to the point where an agreed on debit or credit for each item was reached, no saving would be made. Beyond that point there would be a reduction in the number of ledger entries necessary, —varying from thousands to hundreds,—to a single ledger entry.

Committees of the Society of Railway Financial Officers are now bringing this clearing house plan to the attention of railroad executives and to the attention of the Railroads' War Board at Washington. It is so obviously a real economy that it deserves the consideration of railroad executives, and unless some argument against it can be adduced with sounder backing than anything that has heretofore been brought forth, the plan should and, we may hope, will be adopted by the larger roads, and if it is adopted another mile post will have been passed by the Society of Railway Financial Officers.

ECONOMY OF GOOD SHOP LIGHTING

AN effective way to speed up the production in any shop is to provide proper and adequate artificial illumination—a truth not generally recognized. The advantages of good illumination include reduction of accidents, greater accuracy, less eye strain, greater contentment of the workmen, more order and neatness in the shop and easier supervision of the men, all of which have a direct bearing on shop production.

Take the item of accidents alone. A study of industrial accident records obtained from The Workmen's Compensation and Accident Insurance Company's report indicates that for one year, out of 91,000 accidents 23.8 per cent were due directly or indirectly to improper illumination. Of this 23.8 per cent 10 per cent were due primarily to inadequate illumination, while in the remaining 13.8 per cent the lack of proper lighting facilities was a contributory cause. When it is remembered that an accident not only deprives the shop of the services of the workman but also increases the actual operating expense due to the damage claims, the advantage of reducing the liability of accidents is evident.

Studies made of the effect of good lighting on shop production show that good light will add an average of approximately one-half an hour a day per man to the output which represents a production increase of five per cent, brought about by an expenditure of only one-half of one per cent of the wages—a saving equal to ten times the expense. The subject is of such importance that the Department of the Interior recently issued a technical paper on the relation between illumination and efficiency. This paper points out that the most enthusiastic supporters of proper lighting in shops are those who have taken the step to insure it. The paper also points out that actual instances have been reported where production has been increased from 2 to 10 per cent as a result of improved lighting. It is considered good practice to have the cost of light equal one-half to one per cent of the total wage, which is not high when we consider that an average workman will earn his share of this amount in six minutes. On the other hand, it is evident that it would easily be possible for such a workman to lose six minutes of his time each day because of inadequate illumination.

Simply to install a good lighting installation, however, is only half of the job; it must be well maintained so that it will continue to give good service. The standard of cleanliness for lamp reflectors should depend on a balance between the cost of cleaning and the loss by not cleaning. It has been shown that the loss on a 1,000-watt gas-filled lamp with porcelain enameled reflector will be approximately $34 if allowed to go without cleaning for a year. Figures available for an average shop show that it is possible to clean such reflectors for an average cost of $1 a month or $12 a year, which indicates a saving of approximately $22 per year per fixture.

Letters to the Editor

A REPLY TO DIRECTOR PROUTY'S VALUATION MEMORANDUM

St. Louis, Mo.

To the Editor of the Railway Age Gazette:

A careful study of the memorandum* of Director C. A. Prouty, of the Division of Valuation, Interstate Commerce Commission, indicates that the policy of the Division of Valuation, as set forth by Mr. Prouty, will result in returning to Congress valuations of not more than two thirds to three fourths of the fair value of the railroads of the United States. It is a fact that the law of valuation is still in a plastic state, but this is primarily due to the so-called different "points of view" taken by those interested in valuation matters up to date. The owners of railroads and other public utility properties on the one hand, have, in the light of their experience in the use that has actually been made of their money, attempted to secure fair recognition of all of the elements that have resulted in capital expenditures in bringing those properties to the condition in which they have been valued; while the representatives of the public having regulatory or investigational powers over such railroads and public utility properties, and without extended experience in the expenditures of money for their development, have contended for the lowest possible figures that the owners could be forced to accept, either through negotiation, through the result of precarious franchise conditions, or through court decisions. It is unfortunate that the representatives of our federal government appear disposed to take advantage of this so-called plastic condition of affairs, which is nothing more nor less than the exemplification of the confiscatory attitude, in attempting to crystallize the unfair demands of the regulatory bodies into definitely expressed principles, having behind them the weight and dignity of the federal representatives. The fact that "the decision of this commission will go far toward fixing the law in many instances" should imbue the Interstate Commerce Commission with the extent of the responsibility placed upon them in this matter.

The vice in the railroad and the entire public utility situation today is not the uncertainty as to what is fair, but the uncertainty as to the extent to which the owners of the railroads and other public utility properties can make the courts see the fairness of their contentions in the light of the destructive representations by regulatory bodies. "If the present system of providing service by private capital is to be continued, some way must be found" not only to assure the capital of the treatment which it will receive, but also to assure that capital that it will receive *fair* treatment, and that neither the capital nor a fair return thereon will be jeopardized by the confiscatory attitude of the regulatory bodies.

Director Prouty announces in his memorandum that in spite of the claims of the carriers, the Division of Valuation insists at the outset on confiscating that part of a railroad which was actually spent for clearing and grubbing. If it be shown, or be fair to assume, that clearing and grubbing were actually performed and money actually expended for such purposes, the omission of that item of expense appears to amount to clear confiscation.

The valuation of all of the railroads as they exist today on the assumption that any railroad could be reconstructed by one impulse, in the most economical manner, by present methods and under present conditions, would fall far short of showing fairly the amounts of money that were necessarily expended. The railroads were actually constructed under all conditions, and in many instances it was not possible to proceed by one impulse. In many cases on account of financial conditions, several such impulses were necessary to bring such projects to completion, and the actual amount of money spent under such conditions would far exceed the amount necessary for the construction in the most economical manner, under present methods and under present conditions.

It is certain that the government parties should not be required to report, as though it were a fact, what merely comes to them as hearsay from some other sources, but the Division of Valuation should give fair recognition to the fact that many items of expense were incurred which cannot today be established as facts, as it is certain that a full inventory of hidden quantities, especially on the older lines, which constitute the bulk of the mileage of the country, is not possible; it is certain that expenses were incurred in performing construction of which no physical evidence appears today, and it would be only fair to make some allowance for such expenses, which does not seem to be proposed.

In referring to depreciation Mr. Prouty's memorandum states, "it is conceded by the government that a public utility has a right to demand from the public in the way of earnings an amount sufficient to cover depreciation. Will it be conceded by the public utilities of this country that nothing need be allowed for the wear of the rails or the ties? Certainly it will not be and ought not be.

"It is true that in the case of a composite property, like a railroad, made up of different units of various kinds with a life of varying lengths, there comes a time when renewals will offset depreciation, so that if the property is properly maintained it does not depreciate as a whole below that point."

Of course, it goes without saying that there is depreciation in a railroad, and it is also true that the property finally reaches a point where, if properly maintained, the depreciated value does not further decrease. What, then, if the difference between the first new value and the so-called depreciated value? The owner does not invest his money to the amount of the depreciated value, but he does actually invest to the amount of the total cost. If it be contended by the Division of Valuation that carriers should be permitted to earn only on the depreciated value, then they should also be permitted to earn enough money to retire securities to the amount of the depreciation.

A study of railroad investments and railroad net earnings during the history of railroads in the United States will convince any fair minded qualified individual that the railroads have not in the past earned a fair return, and by no stretch of the imagination can it be assumed that the railroads as a whole have earned enough money to retire capital in an amount equal to the difference between the new cost and the depreciated value. If the commission desires to set up a new basis today for the control of future rates and earnings, then the reproduction cost now should be the basis of present rates, and the rates should be sufficient to earn above that return enough money for a capital retirement fund to retire the amount which the commission might claim as depreciation of the property as a whole, within such a period of years as the commission might determine.

No such basis has ever been followed in the past for amortizing that portion of the capital value representing original investment which is claimed as depreciation. The depreciation funds, so-called, have been deferred maintenance funds, and the accruals of those funds have been used not for the purpose of retiring capital value, but merely for the purpose of making renewals in such a way as to average the maintenance and renewal charges over a period of years. If such depreciation funds are set up and continue to be used, and if there is no additional fund for the retirement of capital

* Abstracted in the *Railway Age Gazette* of October 5, page 599.

value, then certainly the owners are entitled to a fair return on the original investment, because, notwithstanding the fact that there may be actual depreciation in the physical property, the actual investment in the service is equal to the entire original investment. If the depreciation funds be properly kept up, there will always be invested for the public and in their interest the depreciated value of the property plus an aggregate amount in the depreciation funds, the sum of which on any correct basis must always equal the original investment. As the depreciated property and the depreciation funds, which together equal the original investment, are in the service of the public, the public should pay a return on that amount and not on a depreciated value. Depreciation funds have not in the past been built up on any such basis, and if the sum of the depreciated value of a property and its depreciation funds are less than the original investment, it is due to the fact that on the one hand there has been no proper method of making the users of the property pay for the depreciation in its value, while in their service; and on the other hand the net earnings of the company have never been sufficient to afford a fair return on the investment, and the users are in default to the owners in the amount of the difference. A fair recognition of the inadequacy of the rates in the past and the inadequate returns that have been earned, will entitle to recognition at this time, the cost of reproduction new and a fair return upon that cost.

If the Commission desires for future regulation of railroads that the depreciated value be used as a basis on which the fair return should be figured, then the general relation of depreciated value to original cost should be determined, and the rates should be so adjusted as to make the net earnings sufficient to retire the difference within such period of years as might be indicated, either by the retirement of an average amount each year on a straight line basis, or by the retirement of a fixed amount at the end of a fixed period of years on the sinking fund basis. It is unfair at this time to seriously contend that there is in the service of the public the depreciated value of the properties, as the original investment, is really in the service of the public and if in fact the properties have depreciated, the users of that property have been the gainers in the amount of the depreciation for which they have not yet reimbursed the owners. The value in the service of the public is the original investment, or when that can not be ascertained, the reproduction cost new.

If the depreciated value be made the basis of rate making at this time without passing through a transition period during which the carriers will receive the amount claimed as depreciation, in addition to a reasonable return, then certainly the difference between the original investment or reproduction cost new, and the so-called depreciated value, is the amount that will be clearly confiscated from the owners.

Mr. Prouty states that no allowance has been made for contingencies as such by the commission in the tentative value of the Texas Midland, and endeavors to justify that error of the commission by the claim that no expenditures have been made except such as were discovered by the all-seeing eyes of the government parties. In another part of his memorandum he states that no allowances were made for hidden quantities except such as could be noted as actually existent. It is a fact, however, that no matter how clear or complete the histories of railroads may be, many expenditures were made in the construction of the roads of which record can not be found, and of which there is no physical indication today.

An inventory of a railroad based on the most economical method under present conditions and under present practices makes no allowance whatever for conditions that increased the cost of every item of physical property. The construction of many lines has been seriously delayed by unusual weather conditions and unprecedented floods. Bridges have been washed away during construction, embankments have disappeared into sink-holes and swamps. Organizations have been maintained through long periods, protecting the incompleted property during floods and other conditions preventing progress. Large sums have been spent on bridge foundations in excess of the requirements of the plans on record, and the plans have frequently not been corrected to show the increased cost of such construction.

Certainly it is not fair to say that because a railroad could not possibly establish by complete detail records or by physical conditions on the ground, many years after construction, the exact fact of such increased expenditures, no allowance should be made for them. It is to cover such expenses as those outlined above that an allowance for contingencies has always been made in valuations, and it is unthinkable that the commission will adopt the policy of the division, as set forth by Mr. Prouty, that no contingencies whatever should be allowed for, as it is just as necessary to allow them in arriving at a fair valuation, as it is to allow for them in a preliminary estimate. Omission of any item for contingencies amounts to a clear confiscation of a very considerable portion of the investment.

The statement that no engineering should be allowed on land, and that whatever there may be is more properly chargeable to the land, would be fair enough if the cost of the engineering had really been added to the cost of the land, but only the fair market value of the land was allowed. Certainly the engineering in connection with the acquirement of railroad property amounts to a very material sum, and some allowance should properly be made for that item.

The contention that the value of railroad land is equal to its area multiplied by the unit value of similar or adjacent lands is so far wrong that it is difficult to see how the Commission could have been misled into making any such unfair assumption. Mr. Prouty states, "Nothing is included for acquisition, nor for severance damages, nor for interest during construction." Certainly land can not be acquired without attendant expenses. Right-of-way agents and their staffs, abstractors, land surveyors, local attorneys, condemnation proceedings, all cost money, and are represented in the physical property. It is absurd to omit allowances for them and to assume that the expenses were never incurred.

While it may be the opinion of the commission that severance damages are not real damages, yet it is a fact that the railroads have paid out millions of dollars for such damages, and the omission of such a large item of expense, which is so clearly represented in the capital invested in the railroads, is so unfair as to require no comment.

Nothing whatever is said about the necessity of railroads paying higher prices for lands even where no severance is made, in order to secure particular locations for passenger stations, freight stations, or terminal yards, nor for the higher prices than market value of surrounding lands that must be paid to get continuous strips for right-of-way use. The railroad value of the lands far exceeds the market value of the surrounding properties, and this fact would seem to be so apparent that the attitude of the commission appears to be deliberately unfair. There may be some doubt as to the factor by which the market value of the adjoining land should be multiplied in any particular instance to get the railroad value, but that difficulty is not sufficient justification for ignoring that large item of expense, and it would be a comparatively easy matter for the commission to determine in any particular case just what that factor should be.

Unless the Commission, by adopting a broad policy of public welfare, follows radically different lines than those laid down by Mr. Prouty, the future of transportation facilities in the United States is not encouraging, as the policy laid down in Mr. Prouty's memorandum would be so restrictive of development as to very largely stop railroad construction and extension.

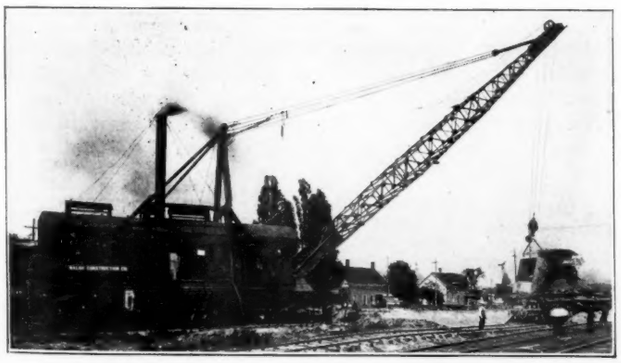
C. E. SMITH.
Consulting Engineer.

An early stage in the grading.

Pennsylvania Builds Hump Yard at Indianapolis

Modern Classification and Engine Terminal Facilities Are Being Provided. Extensive Drainage System Installed

TO keep abreast with the rapid industrial development of Indianapolis and its increasing importance as a railway center, the railroads entering that city are spending large sums of money in expanding their facilities for the handling of the freight and passenger traffic which passes through or originates at that point. The Pennsylvania Lines alone now have extensive improvements under way in this city for yards, freight houses and track elevation work.



Excavating a Subway with a Drag Line

One of the most important of the several projects is the so-called Hawthorne yards, a new freight terminal yard, which is now in the course of construction on the eastern edge of the city.

Indianapolis as an Interchange Point

The lines of six railways enter the city of Indianapolis, the Big Four with six divisions, the Pennsylvania Lines with five divisions, the Cincinnati, Indianapolis & Western with two divisons and the Monon, the Illinois Central and the Lake Erie & Western with one division each. A seventh road, the Indianapolis Union Railway, which operates the Union station, the Union tracks and the Indianapolis Belt Railway, provides the means for the interchange of traffic between the several roads.

The freight interchange is handled over the Belt railway tracks. This line is 14 miles long and is located almost entirely within the city. It extends around the city from a connection with the tracks of the Monon and the Lake Erie & Western, near Twenty-first street and Martindale avenue, connecting with the several other railways and their various divisions and has its second terminal at the connection with the Canal branch of the Big Four in North Indianapolis.

The convergence of these six roads with their 16 divisions in Indianapolis creates a great amount of interchange business requiring extensive pards. In the early days the yards were built largely inside the Belt railway and now, with the enormous increase in the traffic handled and because of the growth of the city, it is difficult to find room for expansion at the old sites even if such an arrangement were considered desirable.

The facilities of the Indianapolis division of the Pennsylvania lines for handling freight prior to this improvement consisted of a yard east of State avenue inside the belt line and any plans for its expansion involved a large expenditure and would not have provided adequate facilities for any reasonable length of time. It was, therefore, decided to build the new facilities on land acquired for the purpose east of the Belt railway and north of Prospect street, which

Some of the Excavation for the Yard

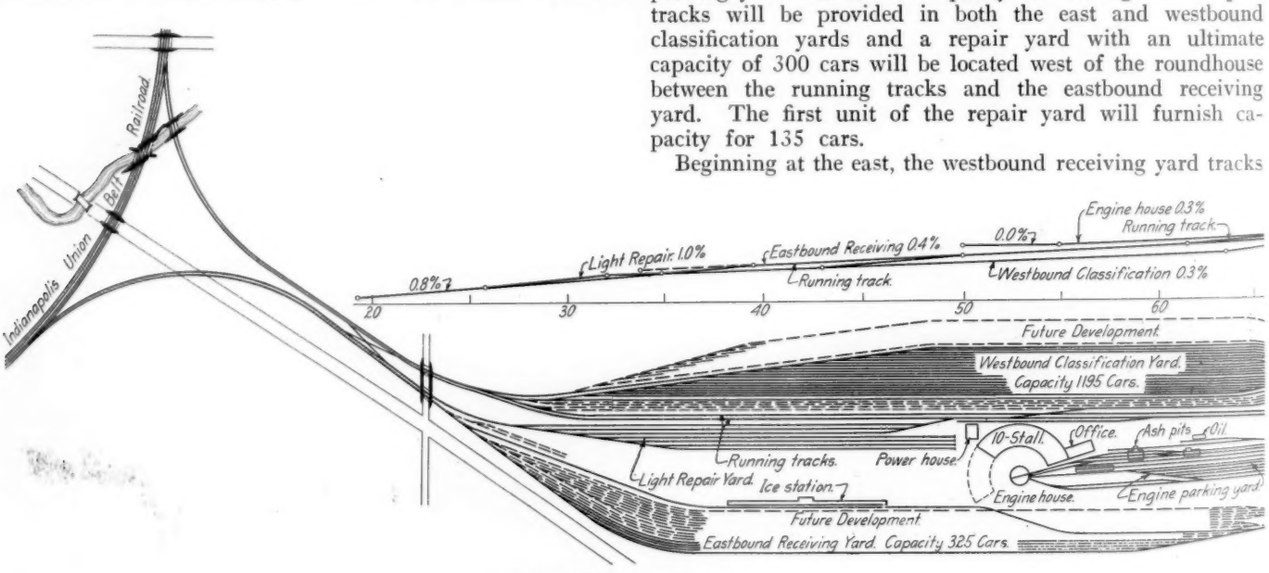
carries the traffic of the Indianapolis & Cincinnati traction line. The property is approximately two miles long and one-quarter of a mile wide and extends from Sherman Drive on the west to Arlington Road on the east. The yard is connected with the Belt railway on the west by means of double wye tracks and with the main line of the Indianapolis division on the east by a double track railroad 2½ miles long, built from a point two miles east of Irvington on the main line to the east end of the new yard. All Indianapolis division freight trains will be handled over this connecting line, putting an end to the operation of freight trains through Irvington and the territory between Irvington and the yard at State street. This connecting line is built on a right-of-way 150 ft. wide, acquired for the purpose.

In developing the plans for the improvement consideration was given to the probable future needs of Indianapolis with the intention of building now only for the present and the immediate future, and adding to the layout when it was found necessary. In carrying out this idea sufficient property was acquired and the yard was designed for an ultimate capacity of 10,000 cars. The present improvements include the construction of 50 miles of yard tracks, a reinforced concrete engine house, a reinforced concrete coaling station, inspection pits, ash pits, car repair facilities and an icing station for icing refrigerator cars in transit.

The first yard unit to be constructed will have a capacity of 3,500 cars and will include eastbound and westbound receiving yards and east and westbound classification yards with repair and caboose tracks in each yard. Ten stalls of the engine house will be built as a part of the first unit, and the plans provide for its extension to a 30-stall house when necessary.

Arrangement of the Yard

The yard was designed and built as a gravity yard, two double track humps being provided with a scale on each.



West Half of the Yard

The running tracks divide the east and westbound yards into units. These tracks are laid 20 ft. between centers. In the yards the standard spacing is 13 ft. except for the ladder tracks which are laid 18 ft. between centers. The westbound receiving yard will ultimately have 33 tracks, with a total capacity of 2,470 cars. The first unit will have three tracks with capacities ranging from 90 to 100 cars, three tracks holding from 80 to 90 cars, one track with a capacity for 75 cars and another for 80 cars, or a total capacity for the first unit of 695 cars. The arrangement of the tracks for the first unit in this and the other divisions of the yard in reference to the ultimate development may be seen in the layout map. The westbound classification yard will eventually be supplied with 33 tracks with a total capacity of 2,130 cars. Of these, the first unit will consist of a total of 20 tracks having a capacity of 1,195 cars.

The eastbound receiving yard will ultimately have 17 tracks with a total capacity of 1,250 cars, and the eastbound

One of the Subways Under Construction

classification yard 41 tracks with a capacity of 2,895 cars. The first unit in the receiving yard will consist of 5 tracks with a capacity of 325 cars and in the classification yard of 17 tracks having a capacity of 1,135 cars. The engine parking yard will have a capacity for 20 engines. Repair tracks will be provided in both the east and westbound classification yards and a repair yard with an ultimate capacity of 300 cars will be located west of the roundhouse between the running tracks and the eastbound receiving yard. The first unit of the repair yard will furnish capacity for 135 cars.

Beginning at the east, the westbound receiving yard tracks were built on a 0.22 per cent grade, descending in the direction of traffic for 2,000 ft., then on a level grade for 2,678 ft. to the approach to the hump. The hump approach is 654 ft. in length and is on a 0.9 per cent ascending grade. The descent from the hump to the eastbound classification yard is over a 3 per cent grade for 150 ft., then on a 1 per cent grade for 1,168 ft., the remainder of the yard being on a 0.3 per cent descending grade in the direction of traffic.

In the eastbound yards, commencing at the west end, the receiving yard is on a 0.4 per cent ascending grade for its

entire length. The approach to the hump, which is about 800 ft. in length, is on a 1.6 per cent grade to the summit. The descent from the hump is on a 2.5 per cent grade for 175 ft., then on a 0.9 per cent grade for 750 ft. From the end of the 0.9 per cent grade the yard tracks are placed on a 0.3 per cent descending grade in the direction of traffic for 1,100 ft., then becoming level for 1,400 ft., before rising to the level of the running track over a grade of 0.5 per cent, 2,000 ft. in length.

Auxiliary Facilities

The terminal facilities for the yard will include a 30-stall engine house of brick and concrete construction. A contract for the erection of 10 stalls in this house has been let to the Alliance Construction Company of Indianapolis. The turntable will be 100 ft. in diameter, and the house 112 ft. deep with a distance of 262 ft. from the center of the turntable to the outer circle wall of the house. A 60-ft. by 144-ft. annex to the roundhouse will be used as a shop room as well as an office building for the road and roundhouse employees. A power house 35 ft. by 81 ft. will also be built in connection with the roundhouse.

One Line of the Drainage System

A contract has been let to the Roberts & Schaefer Company, Chicago, for the construction of a 500-ton reinforced concrete coaling station of the mechanical type. Three cinder pits, three concrete inspection pits and a water softening plant will also be provided. The cinder pit will be of concrete and steel construction. The cinders from the engines will be caught in a hopper under the track and conveyed to carts which in turn will be emptied into cars by an air-driven hoist. The water station will consist of two 50,000-gal. tanks which will be connected with a water softening plant consisting of a water softener and sludge pond. The water will be secured from the city.

A contract will be let in the near future for the construction of a 30-ft. by 58-ft. yard office, the basement of which will be occupied by lockers and rest rooms for yard and road crews. Space will be provided here for an oil room and a boiler room. The first floor will provide quarters for the yard clerks, medical examiner, trainmen, crew despatcher and caller, and a supply room. The second floor will be used by the store clerk, assistant trainmaster, yardmaster and telegraph operators. A storeroom will also be provided on this floor.

Present Status of the Work

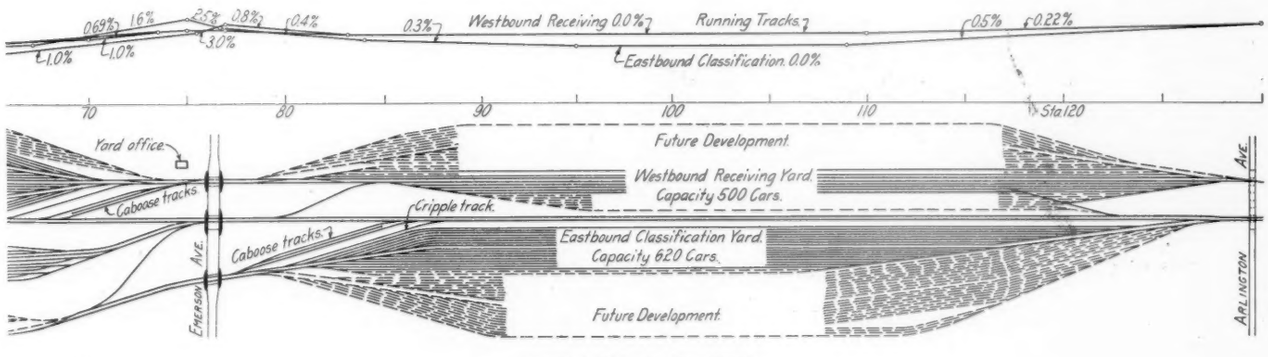
The grading for the yard tracks and for the Indianapolis division connection line has been completed as has the extensive drainage system for the yard and the bridge masonry constructed in connection with the drainage system and the elimination of crossings at grade with the tracks. In the grade separation work Sherman Drive, South Eastern avenue and Emerson avenue were carried under the yard in subways and Arlington avenue over the yard by means of a reinforced concrete viaduct. A bridge with a trough floor and concrete abutments is provided over the Indianapolis division connection to carry the tracks of the Cincinnati, Indianapolis & Western. A 50-ft. semi-circular arch carrying the tracks of the west wye connection to the Belt railway over Pleasant Run, a 6-ft. by 12-ft. concrete box which carries Bean creek under the yards and two bridges carrying Brookville road over Lick creek and the connection track complete the bridge work.

Construction

Work was begun on this project in May, 1916, when the railroad built a trestle along the line of the north wye connection to the Belt railway to provide an entrance track to the yard site. The trestle was necessary in crossing the low and marshy ground encountered in this locality. The contract for the grading, masonry, and drainage was let to the Dunn-McCarthy Company and the Clifford Construction Company, Chicago, who began operation in June, 1916.

The grading consisted of 750,000 cu. yd. of excavation, 200,000 cu. yd. of which was wasted in filling the low ground just east of the Belt railway. Three methods were followed in making the excavation, the heaviest work being done with steam shovels, while in the lighter work both a dragline machine and Western excavators were used.

The heaviest work was just west of Arlington avenue in the westbound classification yard. The equipment for this work consisted of two shovels and six trains of standard gage dump cars, three trains to each shovel. The earth moved by the shovels was transported west to the low ground



East Half of the Yard

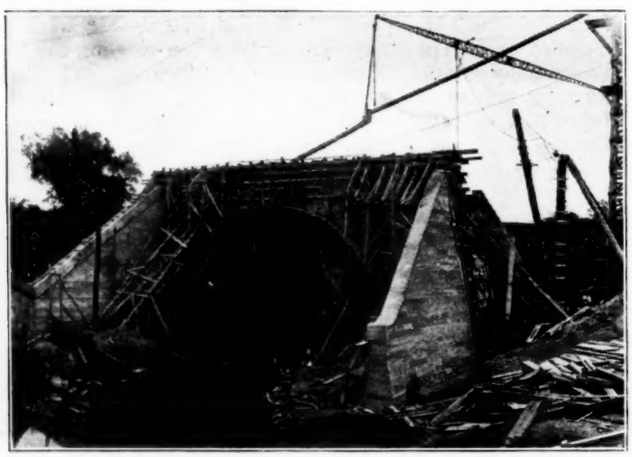
near the Belt railway, and the first fills were made along the line of the double track wye tracks, utilizing the trestle mentioned above for dumping. The 200,000 cu. yd. of excess excavation which was wasted here was placed from construction tracks laid on the fills. The material moved by the dragline was also loaded into standard gage cars, one train being provided for the machine.

A large proportion of the earth was moved by Western excavators which were operated by horses and tractors, the material being loaded into dump wagons for transportation to the fills. An average of 25 teams were used with each of these machines operated by horse power.

The Bridges

The most interesting of the bridges is the reinforced concrete viaduct 296 ft. long which carries Arlington avenue over the yard tracks. The construction of this viaduct involves 530 cu. yd. of foundation excavation, 800 cu. yd. of concrete and 79 tons of reinforcing steel. The viaduct consists of eight spans of 37 ft. and provides a clear roadway of 24 ft. 7 in. The substructure consists of bents built of two reinforced concrete columns resting on 6-ft. by 8-ft. footings. The columns support a reinforced concrete cross girder 4 ft. 4 in. in depth by 18 in. wide and 26 ft. in length. The bents are all single column except at the center where a double column bent was built to provide for contraction. The expansion joint which is placed at the center of the bridge was filled with felt and asphalt.

The main girders spanning between bents are 6 ft. 4 in. deep by 18 in. wide and have spans of 37 ft. They are connected with cross girders 15 in. wide by 2 ft. 4 in. deep, spaced 4 ft. 7 in. on centers. The main girders extend 4 ft. above the floor level, providing the bridge railings which are relieved by paneling. The floor was designed for a uniform live load of 125 lb. per sq. ft., or a 20-ton road roller. The wearing surface of the bridge is of concrete and beneath the



One of the Concrete Arches Under Construction

pavement the floor is thoroughly waterproofed with Minwax, laid in 5 plys.

The bridge is founded on hard pan, no piling being necessary. The construction materials were unloaded from the cars at the ground level, and the concrete was placed in the forms by means of a tower and chute.

A 50-ft. concrete arch was provided over Pleasant Run and double reinforced concrete boxes for the subways. At Sherman Drive the subway consists of two 25-ft. boxes and at Emerson avenue of two 30-ft. boxes. Bean creek was carried under the yard in a 6-ft. by 12-ft. concrete box 600 ft. long and a bridge consisting of a trough floor superstructure carried on concrete abutments was provided at the Cincinnati, Indianapolis & Western crossing. In connection with this bridge it was necessary to raise the Cincinnati, Indianapolis & Western tracks and two bridges in the vicinity. The bridges were raised under traffic by jacks and were placed on blocking. When complete, the old stone abutments will be encased in concrete and will be provided with new bridge seats.

The Draining System

The drainage for the yard and subways is provided by a system of sewers consisting of one main sewer 6,300 ft. long running through the center of the yard and emptying into Pleasant Run and lateral sewers extending across the yard at intervals of 600 ft. The surface water is collected into 110 inlets placed along these lateral sewers. The main sewer was excavated with a dragline machine and was built

An Early Construction Trestle

of segmental blocks. The lateral sewers were built with trenching machines.

In the drainage system it was necessary to take care of Bean creek which meandered across the site of the yard. The old channel was filled, and the stream diverted to a new channel along the north side of the yard, and a square crossing of the yard was provided by means of a 6-ft. by 12-ft. box culvert. In order to drain the eastbound classification yard it was necessary to lower the creek to a point 1½ miles below the yard. The excavation for the new creek channel was made by a dragline.

Plans for this terminal were developed by the engineering department of the Pennsylvania Lines West, Southwest System, under the directions of W. C. Cushing, chief engineer maintenance of way, and D. P. Beach, division engineer. J. H. Schilling is the engineer in direct charge of all construction.

Military Camp Railways.—The recent accident on a military camp railway in Yorkshire is a reminder that such lines are among the most interesting railway developments of the war. A typical railway of the kind is on the standard gage, but unfenced and with the minimum of signals, while stations, platforms and sidings are also reduced to a minimum. They serve the dual purpose of improving communication within the limits of a large camp itself, besides enabling through passenger and freight trains to be run to and from the camp by means of a junction with the most conveniently-situated trunk line. Such railways, which must not be confused with the narrow gage camp lines, are also valuable for instructional purposes. They are entirely operated by soldiers, who do not, however, always wear khaki, but the familiar blue-suits and uniform caps, which are distinguished by regimental badges and military brass buttons. Some of these railways own a certain amount of merchandise stock, including high-capacity cars, but most of the stock has been supplied by railway companies. For instance, on a military railway "somewhere in the south of England" the regular service is maintained by Brighton Railway locomotives and coaches, locomotives constructed at Swindon, and Southwestern passenger cars.—*Railway Gazette, London.*

Society of Railway Financial Officers

Interesting Papers Were Read on Thrift Encouragement and on Handling the Liberty Loan Subscriptions

THE eleventh annual meeting of the Society of Railway Financial Officers was held on Tuesday, Wednesday and Thursday of last week. Part of the sessions were held at the Missouri Athletic Association club house and the others at the Jefferson Hotel at St. Louis. After the roll call there was a brief address of welcome made by A. O. Wilson, followed by a short address by President E. H. Alden.

At the afternoon session Frank Trumbull, chairman of the Railroad Executives Advisory Committee, gave an address which the society voted to immediately print and distribute among its members and among banking institutions. The membership committee's report was then made and accepted, and the membership committee was requested to learn the names of the members who had joined the service of the United States and to print these names as a roll of honor in the minutes of the meeting.

Clearing House Report

T. H. B. McKnight, treasurer of the Pennsylvania Lines West and chairman of the Committee on Clearing House Reports, reported that his committee had turned over to the executive committee the work of interesting railroad executives in the clearing house plan. Some discussion followed, and Mr. McKnight outlined briefly what the clearing house plan was and what progress had been made toward its adoption. The work had been largely educational; the treasurers of nearly all of the larger roads had been convinced of the desirability and feasibility of establishing a clearing house, but the difficulty lay with convincing the accounting officers and up to the present the accounting officers had refused to approve of the plan.

THRIFT ENCOURAGEMENT

At the Wednesday morning session L. E. Katzenbach, treasurer of the Great Northern and chairman of the Committee on Thrift Encouragement, presented the following paper:

Only by the exercise of thrift can the United States successfully accomplish its part in the present struggle. The officers of transportation companies need no report nor recommendation from this committee to support and co-operate with our government officials in all branches of thrift, (a word having the same meaning, but, perhaps, a healthier sound than the word efficiency).

As long as the necessity exists, the transportation companies will help their employees to purchase government issues of bonds, and will offer facilities for easy payment. The issues of Liberty Loan bonds and War Savings certificates have done and will do much to start habits of thrift, and, no doubt, today there is a Liberty Bond in many a home that never before had a dollar laid by.

It has been stated that railroad employees represent about 10 per cent of the wage earning population of this country, and a class of such large relative size has its influence upon the life of the country in times of peace as well as war. The committee hopes that the thrift habits formed now in times of war may be continued indefinitely by co-operation between transportation companies and their employees, and offers its report as a recommendation for preparedness to meet the problems, not only of today but of the future.

Since our last meeting the subject of thrift has been studied in many different ways, and the time for this society to agitate the subject among its employees seems to be most opportune.

In order to ascertain what our transportation companies are doing to encourage their employees to save, your committee on December 28, 1916, sent out a circular letter of inquiry to all members of this society and to financial officers of companies not represented in the society. Replies were received from practically every company addressed.

Many companies maintain pension systems, and a few have hospital and relief organizations, but your committee has thought best to confine its report to plans that involve personal saving and setting aside of funds by employees.

Attached to, and forming a part of this report, summarized in order of their establishment, will be found rules and regulations of the savings and investment plans which have been reported to your committee, and where the information could be obtained, figures are given showing partial results of these plans in effect. The small number of plans in effect has been surprising to your committee, and readily suggests the question as to why there are not more. Do the savings banks and institutions offer all the facilities and benefits that a corporation can offer to its employees through a savings plan of its own? Is there anything to be gained by offering employees an opportunity for thrift and investment? Why do such a small percentage of employees avail themselves of the plans now in effect? These and similar questions present themselves after the study that your committee has given to this subject, and the answers may be approached from different angles, according to the purposes of the employer.

Recent economic development, resulting in increased division of labor and changing social conditions, has brought out the study of welfare work among employees, and all efforts in that direction, based on the proper relation of employee to employer, are designed to produce co-operation. Only by co-operation can all the units of organization reach combined efficiency.

Before attempting to answer the questions above presented it is necessary to determine the relation between thrift and co-operation. Figures are available to show the economic advantages of pleasant working surroundings, proper sanitary arrangements, etc., and the advantages have been the result of the improved physical and mental condition of employees. A proper mental condition implies freedom from anxiety and worry, a condition of mind hard to realize, in the best of surroundings and working conditions, if one's bank account be constantly threatened with an overdraft. Fair wages are necessary, it is true, but with the ability to save must also be the inclination. The function of the thrift plan is to develop the savings inclination and encourage it to become a habit. It does not require much imagination to picture the mental satisfaction of an employee who has a reserve fund, however small, that is increasing to provide for the "rainy day."

If you are willing to concede that a savings account laid by and invested helps to produce the mental attitude essential for co-operation, and that co-operation should be developed in every possible way, the savings plan or systematic encouragement of thrift among employees deserves consideration in railroad organizations.

Properly managed a department of savings or investment should be able to reach many employees that the savings institutions do not attract, and with great benefit to the employees by reason of the saving in administration expense. The railway companies may expect to profit by better loyalty and co-operation from their employees.

One reason for the small percentage of employees enjoying

the savings facilities offered may be the decreasing margin between wages and living expenses, and another may be the employee's unwillingness to have his employers know the extent of his savings, but your committee suggests, if the savings plans now in effect were advertised as carefully as the railway companies advertise their traffic, that the increase in the number of savings accounts would be quite noticeable.

We recommend to those transportation companies having at present no savings or investment plans for their employees that they each institute some such plan. We further recommend that savings plans include provisions along substantially the following lines:

1. That the plan or fund be under company management or control.
2. Company guarantee of principal of deposits, and interest at a rate fixed from time to time by the governing board.
3. Systematic deposits with a low minimum.
4. Privilege of making deposits through payroll deduction orders.
5. Loans in excess of deposits to needy employees (each case to be handled by application to the governing board).

Included in the report were outlines of the thrift plans of a number of railroads including the Pennsylvania Railroad Employees Saving Fund, the Baltimore & Ohio Relief Department, the Employees Saving Fund of the Pennsylvania Lines West of Pittsburgh, the Great Northern General Office Employees Association, the Soo Line Co-operative Association, the Chicago & Alton Employees Savings and Loan Association, and the Arizona & Eastern Savings Plan. Under the head of Investment and Profit Sharing Plans were considered the Great Northern Employees Investment Company, Ltd., and the Illinois Central method of selling stock to employees. The description of these plans is omitted because of space limitations, but will be published in later issues of the *Railway Age Gazette.*

The committee consisted of: L. E. Katzenbach, chairman: Byron Cassell, A. B. Jones, R. R. Reed, Frank Scott and E. H. Alden, ex-officio.

After a rising vote of thanks, the following resolution was adopted:

"*Resolved,* that a special committee of three, of whom the president shall be one, be appointed by the chair to confer with the Honorable Frank A. Vanderlip as to the possible service by this society and its members in assisting to place new war savings certificates, and that such committee be and hereby is empowered to co-operate with Mr. Vanderlip and the committee of railway executives as may seem to be for the best interests of the United States government, and report back to the executive committee its recommendations."

ARE THE RAILROADS GETTING THEIR DUES?

John G. Lonsdale, president of the National Bank of Commerce in St. Louis, then gave the following address:

To all those who give attention to the underlying causes of a nation's welfare, the trend of the railroad situation in this country for the past several years has been alarming; in fact, *so very alarming* that, were it my purpose merely to offer a categorical answer to the question, "Are the railroads getting their dues," I should voice an emphatic "no," and sit down with the knowledge that my opinion could not be successfully challenged. But, while I do not intend to delve very deeply into railroad history and statistics, still I wish to elaborate my "no" just a little.

Fifty million people in this country are owners of railroad securities, either directly or through investments in banks and insurance policies; but, strange as it may seem, these people are just being waked up to the fact of their ownership through the educational work of the National Association of Owners of Railroad Securities—an organization, by the way, that is deserving of the active support and co-operation of the management of all railroads. However, there are other—and, to the careful student, more important—considerations that call for a broad public interest in railroad prosperity. Our nation, as it exists today, has been welded and held together no less by our railroads than by our Federal Constitution and form of government. So important to our business and industrial life is the existence and operation of this great railroad system that if all the property of which it is composed were to be suddenly destroyed, the real estate owners of the nation, in order to uphold the values of their lands, could well afford to donate the twenty billion dollars necessary for replacing every railroad. It seems unaccountable, therefore, that the Interstate Commerce Commission should actually place the life of this great industry in jeopardy by its refusal to grant an increase of rates commensurate with the increased costs of operation. It is hard to say what considerations dictated this refusal.

When the federal government in 1887 eliminated competition as the governing factor in the fixing of railroad rates, it devolved upon that government to allow rates that would give the industry a fair return upon the capital invested and reasonable compensation for the risks involved. The Interstate Commerce Commission is the particular branch of the government to which this duty has been delegated. While other industries are creating great contingency funds for the expected after-the-war period of depression and adjustment, our railroads are falling behind on current dividends and expenses. Gross profits have vastly increased, but expenses have increased faster.

As a result of these conditions, the flotation of railroad securities on a satisfactory basis is a virtual impossibility. Not only must bonds be issued at high rates of interest, but even then they must often be sold at a ruinous discount. And, at the present moment, on account of heavy governmental requirements for capital, the railroads are still further hampered, until it seems that the government may be forced to render assistance. This may be done by directly furnishing capital in the form of loans; or, the situation might be somewhat relieved by encouraging the rediscounting of railroad obligations by the federal reserve banks. On June 11, 1917, in reply to an inquiry as to the eligibility for rediscount of 90-day paper of a certain waterworks company, the Federal Reserve Board wrote as follows: "If the proceeds of the paper under consideration have been or are to be used to provide funds for pay rolls, purchases of coal, etc., and if the paper is otherwise in conformity with the law and the provisions of the board's regulations, it is eligible for rediscount by the federal reserve bank." This ruling would, no doubt, apply to railroad paper as well. The government prescribes the system by which all railroads shall keep their books, and these records should therefore be satisfactory as a means of determining whether any railroad's financial condition is such as to make its paper eligible.

Of course, I realize that providing for the free rediscounting of railroad paper would not offer a permanent and sound solution for your problems, because any large amount of outstanding short-time obligations is a menace to railroad success. Nevertheless the present moment calls for emergency measures, and something must be done quickly. A public statement from the reserve board signifying its willingness to accept such paper for rediscount would have the effect of strengthening railroad stocks and bonds in the estimation of the investing public, in addition to providing a considerable amount of otherwise unavailable capital.

This matter of declining railroad security markets and diminishing returns upon such securities has a very serious bearing upon the successful placing of United States government bonds. It is a well-known fact that bonds can be more easily and quickly sold to those accustomed to buying securities—that is, to the investing public. But this part of the public is not prospering now—ground is being lost every day. If the people at large were made to pay increased railroad

rates, the money would be taken in great measure from those who will not buy Liberty Bonds, or any other kind of bonds, and would be distributed in the form of dividends and interest among those who *will buy*. Furthermore, the return to public favor of railroad securities would have a buoyant effect upon the money market and business interests in general. The importance of propitious money market conditions in floating government securities is well recognized. Pessimists are not natural buyers—optimists are. And it is going to take an enormous amount of security-buying to satisfy the needs of our government during this war.

Regardless of how you approach the railroad problem of today, or what possible solution you revolve in your mind, you are always forced to this one conclusion: Relief must come from the federal government. There is no opposition to increased rates among our big shippers. The Interstate Commerce Commission is free to act. If the commission will grant a general increase, the railroads will finance themselves; if not, and if the present trend of affairs continues, the government must sooner or later furnish financial aid to prevent the collapse of this, our nation's greatest and most indispensable industry. If patriotic appeals must eventually be resorted to in order to privide railroad capital, I, for one, will feel as fully bound to respond as I do to Liberty Bond appeals.

HANDLING LIBERTY LOAN SUBSCRIPTIONS

R. W. Morrison, assistant treasurer of the Pennsylvania Lines West, read the following report on handling Liberty Loan subscriptions:

The American people are not, as a rule, purchasers of bonds as are the people of other countries. Less than one-fifth of one per cent of the people of the United States owned bonds, and only a fraction of these were holders of government securities, prior to the Liberty Loan of 1917. It will no doubt be of interest to consider some facts about the first loan and the part taken by the railroad companies to make it a success. In response to the government's call for subscriptions to an issue of $2,000,000,000 of 3½ per cent bonds, more than 3,000,000 people subscribed and the issue was 50 per cent oversubscribed.

A report of the Liberty Loan Committee of Railroads shows that through the efforts of railroad companies 241,280 employees loaned the government $20,027,966. From reports made by sixty-seven railroad companies, whose total number of employees in May, 1917, was 910,917, there were 113,506 subscribers; a percentage of 12.4. The total payrolls for May, 1917, of these railroads was $71,212,224; the amount subscribed by the employees was $9,646,041, or 13.5 per cent.

The method employed by various railroad companies was very much the same, that was by having the employee subscribe for the amount of bonds desired, the company paying for them, and permitting the employee to repay on the installment plan, by making deductions from their pay on the payrolls, or in cash or check, as they might elect.

Of 25 companies submitting their plans for repayment it is found that 15 had the subscriptions sent to the treasurer, 8 to the accounting department, one to the president, and one to a committee composed of the treasurer, comptroller and general counsel. Fourteen would refund to employees leaving the service the amount paid with interest. Five will refund only the amount paid and six make no mention of a refund. Three companies required repayment in 5 installments on the same basis as required by the government, 8 in 10 monthly installments, one in 11 installments, four in 12 installments, five in 20 installments, two in 22 installments, one required 10 per cent of salary to be paid each half month, and one does not state the number of installments in which the payments are to be made.

Briefly some of the main points of the plans are:

Atchison, Topeka & Santa Fe

Subscription blank to be sent to treasurer. Subscriber states amount of bonds desired but not the number. The treasurer prepares a separate blank for each employee in notifying heads of departments of amount of subscription and deductions to be made on payrolls. Application is made to the treasurer by head of department for refund to an employee leaving the service. Refund is made by voucher. Record of payments by employees is made on loose leaf kept by division and departments.

Baltimore & Ohio

Subscriptions sent to treasurer and by him acknowledged. Blank states amount of bonds desired, but not the number and denominations, also that the subscription is not revocable during period of employment. Treasurer notifies the auditor of disbursements of amount to be deducted on payroll. Record of payments by each employee is made on loose leaf. There is no statement of how refunds are made.

Boston & Maine

Subscription blanks state the amount of subscription, but do not state number and denomination desired. Subscriptions are an order to the paymaster to deduct from the employees' pay 2 per cent of amount subscribed for from wages due for week ending June 1, 1917, 18 per cent for week ending June 15, 20 per cent for week ending July 13, 30 per cent for week ending July 27, and 30 per cent for week ending August 10. Employees desiring to pay by cash or check could do so by remitting to treasurer. Receipts given by treasurer and paymaster for all amounts received. Subscriptions were recorded in books in the order in which they were received, and after subscription closed were arranged in alphabetical order. No mention is made of how refunds, if any, were made.

Buffalo, Rochester & Pittsburgh

Subscription blank states number, denomination, and total amount of bonds desired. The subscription blanks sent to the treasurer authorize deduction of 10 per cent of wages each pay day, but no deduction less than $5. An employee leaving the service is refunded the amount he has paid with interest at 3½ per cent, but an employee who desires to discontinue payments and remains in the service is refunded only the amount paid. Employees are permitted to deposit bonds with the company for safe-keeping and it will collect the interest for them. Receipt is given to the employee by the treasurer for amount deducted from his pay. Record of payments by each employee is kept on loose leaf with full record of number and denomination and amount of bonds.

Chicago, Indianapolis & Louisville

Subscription blank states amount of bonds desired but does not give number and denominations. Record of payment is kept on subscription blank. An employee leaving the service is refunded the amount paid with interest.

Chicago, Milwaukee & St. Paul

Subscription blanks are in triplicate, one copy for payroll maker, one for paymaster, and one for the general auditor. The subscriber states the amount of bonds desired and amount to be deducted for 12 months. A record of payments is made on the reverse side of copy sent to the general auditor. The general auditor keeps all records of subscriptions and payments, but the treasurer acknowledges receipt of same. Payments made in 12 installments, but no mention is made of refund.

Central of New Jersey

Subscription blanks signed in duplicate, one part going to comptroller, the other to the Coal & Iron National Bank. Company makes deduction on payroll and pays money to bank. Bonds are held by bank until paid for. Refund of

amount paid without interest is made when employee leaves the service.

Chicago, Burlington & Quincy

Subscriptions sent to the treasurer. Payments to be made in 20 installments, when employees are paid semi-monthly, and in ten installments of those paid monthly. Record of payment kept in auditor's office on large sheet filed by divisions. Refund of amount paid with interest is made to employees leaving the service.

Florida East Coast

Subscriptions sent to comptroller accompanied by 2 per cent of amount desired. Payments made in five installments on government percentages. Company makes deduction on payrolls and pays amount to First National Bank of St. Augustine. Employee discharged from railway service or entering military service is refunded amount paid.

Great Northern

Subscriptions sent to the chairman, Great Northern Employees Liberty Loan Association provides for payment in ten installments. Refund of amount paid without interest is made to employees leaving the service. Record of payments kept on loose leaf.

Illinois Central

Subscription blanks signed in triplicate, one copy sent to comptroller, one to office making the payroll and one retained by subscriber. An employee could subscribe for an amount not exceeding 25 per cent of his yearly salary. Payments to be made in number of installments as designated by applicant. Refund of amount paid without interest to an employee leaving the service.

Louisville & Nashville

Subscriptions sent to the president provide for payment in 12 installments. Record of payments is made on a large sheet, but no mention is made of where the record is kept. Refund of amount paid with interest to an employee leaving the service.

Lehigh Valley

Subscriptions sent to treasurer provide for payment in 12 installments. Record of payments is kept on back of blank. Company will take care of bonds for employee paying interest to owners. Refund of amount paid without interest made to an employee leaving the service. No special forms for accounting employed.

Norfolk & Western

Subscriptions sent to treasurer provides that payments can be made in ten or twenty installments. Certificate is given by treasurer to each subscriber for amount of his subscription. Record of payments kept on large loose leaf and filed by divisions. Refund of amount paid with interest if employee leaves the service.

New York, New Haven & Hartford

Employees subscribed by giving order on the paymaster. Payments made in five installments on government plan. Employees at Readsville shop given privilege to make weekly payments of $1 each. Paymaster gives receipts for all payments. No mention is made of provision for refund if employee leaves the service. No other forms used.

New York, Ontario & Western

Subscriptions sent to the treasurer provides for payments in semi-monthly installments of five per cent of subscription. No mention is made of provision for refund or other blanks used.

Northern Pacific

Subscriptions sent to auditor of disbursements provides for payments in ten monthly instalments. Receipt of subscription is acknowledged by the auditor of disbursements. The auditor furnishes each department with an alphabetical list of employees from whose pay deductions are to be made. Refund is made without interest by adding the amount to the payroll.

Pennsylvania Railroad

Subscriptions sent to comptroller provides four ways of making payments.

(1) Subscriber may make full payment at time application is made.

(2) Make an initial payment at time of application and make monthly payments to any agent thereafter.

(3) Make an initial payment at time of application and authorize monthly deduction from wages.

(4) May authorize monthly deduction from wages.

Payments on monthly plan to be made in 10 installments. Company will take care of bonds for employees and pay them the interest by adding amount to payroll on last half of June and December. Refund of amount paid with interest if employee leaves the service or wishes to cancel his subscription.

Southern Pacific

An employee was given the privilege of subscribing for bonds to the amount of 25 per cent of his annual salary. Subscriptions were made in duplicate, original was sent to the auditor, the duplicate retained by the heads of departments making payrolls. Payments were made in 25 installments. The auditor kept a record on a large sheet of subscribers, and the amount paid each month, at the bottom of which is shown the total of deductions made each month. Employees leaving the service, or desiring to cancel their subscriptions, will be refunded the amount paid, with interest, by voucher prepared by the auditor. To all employees paying their subscriptions in full, interim certificates were delivered and receipt therefor taken in duplicate, one copy sent to the auditor and the other copy being retained by the treasurer.

St. Louis-San Francisco

Subscriptions sent to treasurer. Payments to be made in ten semi-monthly installments by deduction on payrolls. Deductions made for par value of the bonds and adjustment made by having the first interest coupon detached by the company and draft for $0.48 per $50 bond mailed by the treasurer. No mention is made of refund if an employee leaves the service.

Southern Railway

Subscriptions made in duplicate, one sent to a committee of three, composed of the comptroller, treasurer and general counsel, the other copy retained by the head of the department preparing the payrolls. The comptroller acknowledges receipt of subscription, advising the employee of amount to be deducted from his pay in 12 installments. Deduction sheets prepared and sent to the comptroller monthly, who keeps all records on large loose leaf. An employee leaving the service is paid the amount deducted on the payroll, with interest at 3½ per cent.

Union Pacific

Subscriptions sent to the auditor by employing officer. Payments made on installment plan in 20, or less, installments. Employee was permitted to subscribe for an amount up to 25 per cent of his yearly salary. Deductions sheet is prepared by head of department, showing all deductions made on the payrolls and transmitted to the auditor, who keeps record on large loose leaf, and acknowledges receipt of deductions made. If an employee is drafted in the army, the amount paid will be refunded unless the amount paid is sufficient to cover the price of one or more bonds, then the bond or bonds will be delivered to the employee, together with the amount in excess thereof that may have been paid.

Western Maryland

Subscriptions were sent to cashier, and payments made in 25 semi-monthly installments. Account kept with employee on card on which record of all payments were made. An employee leaving the service was refunded the amount paid, with interest. Those remaining in the service could not cancel their subscriptions.

Wabash Railway

Employees were permitted to subscribe on the installment plan for $50 and $100 bonds only. Those desiring the larger denominations were required to subscribe through their bank. Subscriptions sent to the comptroller and were payable in 20 semi-monthly installments. Employees leaving the service were refunded the amount paid with interest. No special blanks furnished.

Pennsylvania Lines West

The treasury department issued a circular notifying the employees that they could subscribe for Liberty Loan bonds to any amount desired. Attached to the circular was a subscription blank to be filled out by the employee, stating the number, denomination, and par value of the bonds wanted, and authorizing deduction to be made on the pay rolls in ten equal installments stating the name of the company and the division on which employed, his occupation and location. In addition the subscriber was permitted to pay for his bond at once or in a less number of installments than ten, if he so desired. The employee was also notified that if he so desired the company would take care of his bond, the treasurer giving receipt therefor, keeping it in the company's vault subject to the owner's order.

These circulars were sent to the employees by the superintendents, and the subscription blanks detached and mailed to the treasurer in a special envelope. As the subscriptions were received at the treasurer's office, they were numbered consecutively as to division on which the employee worked, each division being designated by a letter. Upon receipt of the subscription blanks, a card was prepared giving the name of the subscriber, the number of his subscription blank, his occupation and address, the number, denomination, and par value of the bonds subscribed for. On the reverse side of the card, provision is made for a record whether the bonds are to be registered or coupon and if registered, the name and address, date of delivery of the bond, and how delivered, and if left in the custody of the treasurer, the number of the envelope in which the bond was filed. After the subscriptions had closed, the cards were separated as to departments and as nearly as possible the way the employees appear on the payroll.

From these cards was prepared in duplicate a list of subscribers, stating occupation, amount subscribed, and deductions to be made in each month from June, 1917, to March, 1918. The total amount subscribed and the monthly deductions shown on this list were balanced with the subscription blanks. The original of this sheet was forwarded to the superintendent for the purpose of having deductions made on the payrolls. Duplicate of the sheet was retained in the treasurer's office, and at the end of each pay period this sheet was turned over to the paymaster, who checked off the amounts deducted from the employees and from this sheet the record of payment was made on the employee's individual card. Receipts were not given to employees from whom deductions were made on the payrolls, but those paying by cash or check were given a receipt for the amount paid.

An employee leaving the service or desiring to cancel his subscription is refunded the amount due him with interest by draft on the Treasurer.

OTHER BUSINESS

At the Wednesday afternoon session a paper was read by J. P. Reeves, treasurer of the Chicago & Eastern Illinois, on Pension Systems for Smaller Transportation Companies, which it was voted to print in the minutes of the meeting.

It was voted to give the executive committee power to cancel the next annual meeting if war conditions made it necessary.

The following were elected members of the executive committee: L. E. Katzenbach, treasurer of the Great Northern; E. H. Alden, treasurer of the Norfolk & Western; R. W. Morrison, assistant treasurer, Pennsylvania Lines West; F. M. Hickman, local treasurer, Missouri Pacific; and D. K. Kellogg, treasurer, Richmond, Fredericksburg & Potomac.

L. E. Katzenbach was elected president; Byron Cassell, treasurer and assistant secretary, Chicago, Indianapolis & Louisville, was elected first vice-president; and H. E. Suckling, treasurer, Canadian Pacific, second vice-president.

WHY SHOULD A RAILWAY EQUIP ITS LINE WITH BLOCK SIGNALS AND INTERLOCKING?

By Henry M. Sperry

Why should a railway equip its line with block signals and interlocking? There are two answers to this question. First, to provide for safety of train operation through signal protection. This is vital. Second, to provide for facility in train operation through signal direction. This is necessary.

Safety of train operation by block signals and interlocking is so well understood that it need not now be discussed. Facility in train operation is now of prime importance and for this reason a discussion of the important part that railway signaling is taking in facilitating the movement of traffic should prove of value.

Our railways are now handling the largest traffic in their history. It promises to increase under the increasing strain of war conditions. To meet this situation 693 railroad companies, under the direction of the Railroads' War Board, are working together to get the maximum service out of every car, locomotive and mile of track.

Maximum service means working every transportation unit to its capacity. The capacity of the car is the number of tons or passengers it will carry; of the locomotive its maximum tractive force, and of the track the number of trains that can be moved over it in a given time. The size and strength of the car determine the load it will carry; the power of the locomotive the load it will pull. The capacity of the track is determined by the speed of the train and the means employed to direct its movement. It is evident that in order to operate at maximum traffic capacity every factor must be considered so that the cars and locomotives will be loaded to their capacity and moved without loss of time. Splendid progress has been made, as shown by the Railroads' War Board report on freight operations for June.

	June, 1916	June, 1917	Increase, per cent
Average train load—tons	642	715	11.4
Average car load—tons	25.2	27.9	10.7
Average daily mileage per locomotive	65.1	70.7	8.6
Average daily mileage per freight car	27.3	29.1	6.6

The increased cost of locomotives and cars is a most urgent reason for working them to their capacity by *cutting out lost time* while on the road and in the shop. For example, locomotives now range in price from $41,666 to $63,000 for the Mikado and $46,450 to $73,850 for the Santa Fe type. This is an increase in prices ranging from 61 per cent to 92 per cent in from one to two years' time. Any means that seems at all promising should be considered. As will be shown, one of the most effective means of eliminating locomotive lost time, while on the road is by the use of automatic block signals and interlocking, as both have been found highly efficient in the *direction* of traffic.

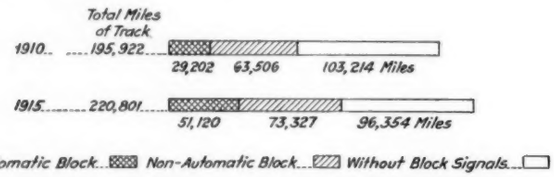
The progress that has been made in the use of block signals within a five year period (1910-1915) is shown in the fol-

lowing table, together with other figures that should be considered in relation to this progress:

	1910	1915
Main track:		
Miles operated	266,185	291,232
Locomotives:		
Total number	58,947	65,099
Number per 100 miles	24.5	25.3
Average tractive force pounds	27,282	31,546
Freight cars:		
Total number	2,135,121	2,356,338
Number per 100 miles	887	915
Average capacity—tons	36	40
	Miles of track	
Block signals:		
Automatic	29,202[a]	51,120[b]
Non-automatic	63,506	73,327
Without block signals	103,214	96,354
Total passenger lines operated	195,922	220,801

[a] See Interstate Commerce Commission bulletin, January 1, 1911.
[b] See bulletin, January 1, 1916.

One significant fact in these figures should not be overlooked: the passenger mileage operated by the roads which appear in the annual bulletin issued by the Interstate Commerce Commission, in the five-year period (1910-1915) increased 24,879 miles, while the track mileage operated under automatic block signals in the same period increased only 21,918 miles. The proportions of automatic and non-automatic signals are shown below:



Passenger Mileage, Signaled and Not Signaled

The significant point in the figures shown is that the progress in the installation of automatic block signals is not keeping step with the annual increase in the miles of track operated. The report of the Interstate Commerce Commission for 1916 shows only 156 railroads using block signals and of this number 83 are less than 50 per cent equipped. There still remains a large mileage of passenger lines operated without block signals of any kind.

There are a number of reasons for this slow progress in the installation of automatic block signals. One of the important reasons is believed to be lack of information as to the *economic value* of automatic block signals.

Railway statistics cover almost every phase of railroad operation except that the data relating to railway signaling is confined to a yearly statement issued by the Interstate Commerce Commission showing the extent to which block signals are used on the railroads of the United States. No statistics are published by which it is possible to measure the value of railroad signaling, as the operating results obtained on the railroads on which they are in use are not published. In fact no general effort has been made to compile the information for publication. The reason, no doubt, is due to the fact that the railroads which have installed block systems and interlocking have found the results so satisfactory and *so self-evident* that no effort was made permanently to record them.

The urgent demand for increase in traffic facilities now makes it imperative to seek this information; and as evidence of its value the following striking examples of results obtained by the use of automatic block signals are presented to show what we may expect from a careful study of railway signaling as a means for facilitating traffic:

Information from a large railroad system with a net operating revenue of over $3,000 per mile: extracts from letters sent to the operating vice-president:

1. By the superintendent of a division equipped with automatic block signals:

We have bunched traffic both morning and evening in and out of X, particularly in the evening when we handle nine regular trains in addition to the fruit and stock trains, which are evening movements. It would be practically impossible to move freight trains between 5 and 11 without the block signals.

Working under the present eight-hour law I believe the system will pay for itself every six or seven years.

2. By another superintendent in charge of a busy division equipped with automatic block signals:

The chief despatcher and myself know that we can move trains much faster with automatic block signals and get better service out of our men as a whole.

3. By another superintendent in the matter of saving over-time:

Now that we shall be required to make 12½ miles an hour with all freight trains or pay overtime, the signals will be of great benefit.

4. By the man who actually directs the trains' movements—the chief despatcher:

They are a great success and delay reducer—they cut down delays from one to two hours on freight trains between A and B [the distance between A and B is 94 miles].

5. By the signal supervisor, pointing out their value in protecting traffic:

The following is a record which I have kept since January, 1916. It includes the number of trains which were stopped on account of danger ahead other than a train in the block. These are dangerous conditions which the train despatcher could not prevent.
12 train stops on account of broken rails.
13 train stops on account of switch partly open due to snow and ice.
6 train stops, cars and engines not clear of the main track.
4 train stops on account of telegraph poles torn down by ice jam causing dangerous condition.

6. Information compiled by a large railroad of which the greater part is single track. This road has had nine years' experience with automatic block signals and now has over 700 miles of its single track equipped.

The following was taken from information furnished by the signal engineer:

The northern division is 98.6 miles long of which 78 miles are single track. Prior to 1908 the division was operated under manual block system with block operators at every passing track, averaging four miles apart. Automatic block signals installed in 1908. After the automatic signals were installed the average time per freight train was reduced two to three hours.

This officer further states that the saving in wages of block operators, not required under the automatic block system, is an offset to the charges under the automatic block system for interest, maintenance and operation.

There are good reasons for the belief that the results obtained on these two large railroads do not differ greatly from the experience of other roads equipped with automatic block signals. If the satisfactory results obtained from the use of automatic block signals are to be extended over the railroads of America, it is evident that a substantial annual increase must be made to equip at least 50 per cent (a modest estimate) of the track used by passenger trains with automatic block signals; and there can be no question as to the importance of decreasing the mileage now operated without any kind of block signals, either automatic or non-automatic.

PULVERIZED COAL FOR CENTRAL OF BRAZIL.—The Central Railroad of Brazil has inaugurated a series of experiments with its new coal-pulverizing plant at Barra do Pirahy, which has caused considerable interest and comment in engineering circles here generally. The plant was furnished by an American firm, was installed here by one of its engineers, and is said to have cost between 2,000 and 3,000 centos of milreis (about $500,000 to $750,000 United States currency). The pulverizer is described as being similar in construction to a cement plant. The coal, freed of its moisture, goes into a hopper and is pulverized so that 80 per cent of it can pass through a 200-mesh screen. It is then passed to the locomotive by means of a conveyor screw and blast, thus bringing the ignitable powder to the mouth of the locomotive furnace, at which point combustion takes place. The recent experiments were conducted under the direction of Dr. Assis Ribeiro, a well-known Brazilian engineer, who is assistant director in charge of locomotion for the Central Railroad. The experiments were carried out entirely with American coal and were an unqualified success.—*Commerce Report.*

A Proposed Code of Car Service Rules*

Carefully Prepared Set of Regulations for Interchange of Freight Equipment to Correct Present Deficiencies

By Transportation Officer

A RAILROAD is built and maintained for the specific purpose of furnishing transportation. The principal revenue is derived from freight transportation. The cost of building and maintaining a railroad and the cost of maintaining engines and cars, all overhead expense, interest and everything that enters into the cost of getting ready to do business has increased possibly 100 per cent during the past 15 years, and the operating costs are still going up. Of course, they are abnormal now, but even under normal conditions, the tendency has been constantly upward. Therefore, granting that we have a plant ready to do business, the cost of which has increased enormously in recent years, and knowing absolutely that an empty car is a constant expense, it is only ordinary common sense to say that any set of car service rules should accomplish the following results: (1) The return of the car to the owner with reasonable promptness. (2) Its loading in both directions as far as practicable. (3) In the event an empty movement is absolutely necessary, it should be in a homeward direction and should be as short as possible.

In moving cars home empty, we have heretofore had an idiotic method of hauling them over the identical route they happened to have traversed loaded; thus, it has been customary constantly to haul cars away from instead of towards home. This results in absolute waste in transportation expense and much wear and tear on the cars.

The railroads of this country should band themselves together to accomplish three or four things. (1) A system that will get cars back to their owners at some time, with due regard to car efficiency. Then enough cars of each class must be built to enable all of the railroads of the country to handle cars loaded in both directions. It is an economic crime to haul foreign cars home empty and system cars in the reverse direction, when one car would take the load back. (2) A car with standard repair parts should be devised, and in the meantime the Master Car Builders' Association should make some arrangement, particularly during these war times, to authorize the repairing of foreign cars with wrong parts without penalizing the repairing line. Cars are now held up for months at a time awaiting the receipt of a small repair part. (3) Foreign cars received on a line should actually be repaired the same as the owners' cars. (4) When it is positively necessary to haul a foreign car empty over any portion of the way to get it back to its owner, the car should be sent the shortest instead of the longest way.

Cars should be constructed for interchange traffic that can be loaded in both directions. For instance, coal from the West Virginia, Ohio and Pennsylvania fields going into the west and northwest should not be loaded in hopper cars, as this entails a return haul empty from a territory where there is a loading, either for an open top car or a closed car of some description. The use of hopper cars should be confined to the local territories of the owning roads, and is only justified where there is no return loading for the cars.

The rules which are suggested below provide for the minimum empty miles. In order to accomplish this, where empty mileage is necessary, all of the roads must band themselves together in a common unit and operate such cars as may be hauled empty the fewest miles. If injustice is meted out to any line, the adjustment should be through some accounting method which is inexpensive, rather than in the physical movement of the car. It is generally acknowledged that the rules in effect prior to February 21 (and these were changed from time to time) which provided no penalty but depended upon mutual affection and brotherly love for their observance, were entirely obsolete so far as controlling the equipment is concerned, and further, that the rules effective February 21, which provided a small penalty, were little better. The penalty was so small that employes of railroad companies took a chance that the rules would never be enforced, or that they would never be found out, and that if they were, they could well afford to pay $5 in order to secure a load that might net their company anywhere from $50 to $400. Therefore, it would seem that it is absolutely useless to issue another set of car service rules based upon any mutual paper agreements which are never maintained, because while one set of roads may carry out the agreement, others cannot or will not, and the thing breaks down of its own weight.

It is obvious that if it is really desired to get up a set of car service rules that will result in the return of the car to the owner, there must be an adequate penalty which will make the use of the car unprofitable. I believe the penalty of $50 provided in the rules below will accomplish this result, but if it will not, it should be increased to such an extent as to bring about the desired result. It is certainly much better for the railroads to establish a penalty that is within reason than to have the government issue a set of rules that will establish a diversion penalty that will be burdensome.

These rules are based upon the following principles: (1) Common box cars are pooled on the basis of cars contributed, or an equivalent thereof. (2) All other equipment is classed as "Special" to the owning line. The originating line is expected to provide sufficient equipment of this class to take care of the business which it originates with the understanding that when this equipment is empty at destination every movement of the car should be in the interest of its prompt return to the owner, under as liberal rules as possible to prevent unnecessary empty mileage.

It must be conceded that no railroad will provide the capital to build equipment for someone else, and that any pool that is constructed must be based upon the basis of ownership or an equivalent, and the rest of the equipment must be handled under a separate set of car service rules which will absolutely secure the return of the car to the owner within a reasonable time. It seems to have been determined that it is practically impossible to handle box cars on an ownership basis; therefore, the only thing left to do is to handle them in a pool. This eliminates all waste in empty mileage, and it rests with the head of the pool to see that the box cars are properly distributed, that adequate penalties are meted out for a failure to carry out the instructions of the commissioner, and that each line having an excess of equipment over and above what it is entitled to, in accordance with what it contributes, shall contribute to the owner an adequate amount over and above the per diem rate for the use of its excess equipment. This amount should be based on the earning capacity of the cars. In the opinion of the writer there is no reason why every line that secures a proportion

*Received in the contest on car interchange which closed June 10, 1917.

of the rate should not contribute its quota of cars. The pool should be so regulated that there will be an equalization during a time of surplus as well as during a time of shortage. This equalization can be so arranged that there will be no actual unnecessary movement of cars in order to accomplish a just equalization in money.

Every manipulation of the pool, and the handling of the other equipment under an ownership basis, should be with a view of eliminating every unnecessary mile of switching or terminal expense, thus securing the highest efficiency possible. To do this, all roads must constitute themselves as a unit in the handling of empty cars, where an empty haul is necessary, and instead of spending hundreds of thousands of dollars to home-route cars, and the manipulation of equipment on the basis of each individual car, these empty cars must be so handled that the car actually moves the least number of miles to get home. If there shall be an injustice done to any subscriber line, it should be adjusted between the roads as a whole on the basis of the empty mileage handled, rather than to make any attempt to handle each car on its record rights, which has resulted in the unnecessary wastage of millions of dollars in this country.

Under the old rules cars have been handled directly away from home in innumerable cases, in order to get the car back to some specific junction point that it may then retrace its steps over another road through identically the same territory, thus wearing out the cars, creating unnecessary mileage and decreasing efficiency. There is also a heavy empty mileage created on account of the condition of equipment and the fact that while the M. C. B. rules provide that foreign cars must be repaired the same as those belonging to the owner, this in effect is not done. There are thousands of cars interchanged today which could be made available for loading for a small expenditure of money, but they are returned to the owner in order that the line that has them may get rid of doing the work, because it has all it can do to take care of its own cars. However, the other fellow is taking the same action, and in the end what we have is a large transportation expense.

As these rules provide that the box car equipment, which is used as the medium of interchange, is pooled, the rules for the handling of the balance of the equipment classed as special equipment, should be tightened up to some extent, but still leave sufficient flexibility to prevent unnecessary handling of empty cars. This I have tried to cover. It will be observed, for instance, that it is provided that once a foreign car reaches the tracks of a railroad having direct connection with the owner, there is no other outlet than the delivery of the car to the owner, loaded or empty. The writer believes this is absolutely right and just, and that it is necessary to encourage car owners to provide themselves with equipment. A road which serves coal interests provides itself with equipment to take its coal to market, and it is therefore justly entitled to the return of these cars. Unless they are returned the shippers on its line will not be provided with transportation facilities. It should be expected by the owners of this special equipment that the cars will be loaded in return movement wherever that is possible under the restrictions named. Under no circumstances should we assume that any class of equipment should be returned empty that can be loaded, as it would in many instances double the cost of furnishing transportation to return a connecting line's cars empty and then haul cars empty in the opposite direction. This not only creates unnecessary expense, but would compel us to increase our equipment to handle a given traffic.

The car service rules effective February 21, provided that cars may be back-hauled once. This rule was impracticable in that it is almost impossible to keep information with the car at all times showing what service it had performed. Our rules provide that a car received from a connecting line may be handled as desired, but it must be disposed of in accordance with the rules within 30 days in order to escape penalty. The penalty rate for the first 30 days is fixed at $0.50 per day; for the second 30 days, $2 per day, and for any additional period, $5 per day.

Under the old penalty rule the delivery of a car to a belt line, or a road for return loading, broke the penalty and thus nullified the intent of the rule, which was to get the car home. This has been covered here by a provision that such delivery will not break the penalty, provided the car is returned to the delivering line within 30 days.

When it comes to handling cars belonging to indirect connections the writer has endeavored to be as liberal as possible, with due regard to keeping the car moving toward the owner at all times. These rules provide that a car may be moved locally loaded or empty but when delivered off the line it must always move in the direction of the nearest junction point.

In the absence of any loading in accordance with the various options given, the car must be short-routed empty to the owner at the nearest junction point, and every line must receive and haul cars in home route regardless of whether they handled them under load or not. This is the rule now in effect on gondola cars, as promulgated by the Commission on Car Service, and it is increasing the efficiency of coal movements wonderfully, by cutting out unnecessary empty haul and saving a vast amount of money in getting the cars back to the owner. If an injustice is done to any road it may appeal to the Arbitration committee.

We have also provided that cars may be returned empty to the delivering line by certain railroads to be enumerated by the American Railway Association, and published in the Equipment Register, having in mind that roads, such as traction lines and short line railroads will not be able to find loading in accordance with Rule 3, and that, therefore, cars must be returned empty or loaded to the delivering line. However, as between trunk lines, or roads of their length, there is, in our judgment, no reason why the cars should not be handled strictly in accordance with Rule 3. Where it is necessary to haul a car home empty, these rules provide for getting it home the nearest and the cheapest way. Once a car is billed home to the owner empty it may, of course, be loaded by any line over which it passes, so long as it is loaded in accordance with the rules. The elimination of the charge for hauling an empty car will cut out an enormous amount of unnecessary accounting.

For the delivery of a car contrary to these rules we have provided a penalty of $50. It has been our experience that rules that bear no penalty are inoperative and a small penalty will not cure the evil. The penalty must be sufficiently high to make it absolutely unprofitable to misuse a car. I am firmly convinced that unless it is done, any separate set of rules originated and put into effect by anybody, will be absolutely ineffective. I am likewise convinced that unless we put into effect both a diversion penalty and a time penalty, the Interstate Commerce Commission, which now has the authority, will issue a set of rules and the penalty for the infraction of these rules will be much more severe than is here contemplated. Indeed, I am not so sure but that this diversion penalty should be $100 instead of $50.

The home-route card is unnecessary in the handling of cars under these rules. This will save an enormous amount of money in stationery and unnecessary empty hauls. Under the rules proposed below the cars are handled in accordance with the initials stencilled on the cars, and they are kept moving loaded or empty in the direction of the owning line.

In the event these rules should be applicable to common box cars at any time, an additional clause should be added to Rule 2*d* which sould provide that in the event the

balance as between any two trunk line carriers shall be in excess, say of 10 per cent of either line the deficient line shall have the right to take cars belonging to a direct connection out of an interchange point to some point on its own line for return loading in accordance with Rule 2.

A PROPOSED CODE OF CAR SERVICE RULES.—To govern all equipment other than common box cars, which are pooled.

RULE 1. (A) Foreign cars must be utilized as far as practicable for loading to other lines, in accordance with Rules 2 and 3 in preference to system cars.

(B) Any road shall have the right to agree with any other road to deviate from Car Service Rules 1, 2, 3 and 4, inclusive, in the handling of cars.

(C) The movement of a *foreign car* except as provided in these rules will constitute a diversion.

(D) A subscriber* road receiving a loaded car from a non-subscriber** road, an industrial road or a shipper, must require that such car be routed in accordance with Rule 2 or 3.

(E) Thirty days will be allowed each line at the current per diem rate. A penalty will be added for all time held in excess of 30 days as indicated in Per Diem Rule No. 3. The delivery of a car empty to a connecting line for return loading, or to a belt or switching line for loading or unloading, will not break the penalty rate, provided the car is returned to the delivering line within 30 days.

RULE 2. A car belonging to a *direct connection* may be:

(A) Moved locally loaded or empty. When delivered off the line it must be:

(a) Returned to the owner direct, or

(b) So loaded that the owner will participate in the freight rate.

(B) If empty at a point of interchange with the home road the car must be confined to the switching territory of the holding road. If there is no loading at that point to or via the home road, it must be returned to the owner empty.

All lines interchanging cars at a common point or within switching limits, either over their own rails, through an intermediate line or lines, or via a car ferry or float, within such switching limits, shall be considered a direct connection under these rules. This information shall be published in the Official Railway Equipment Register, and when the interchange is other than via their own rails, the channel through which interchange is effected must be shown.

Note: Where a movement of traffic, in the opinion of the carriers interested, requires the return of empties belonging to such lines at the junction point where delivered loaded and such carriers fail to agree, an appeal may be made to the Per Diem Rules Arbitration committee, whose decision in the matter shall be final.

RULE 3. A car belonging to an *indirect connection* may be:

(A) Moved locally loaded or empty. When delivered off the line it must be:

(a) Loaded to any point in the direction of, but not beyond, the nearest junction point with the owner, or

(b) Loaded via any route so that the owner will participate in the freight rate, or

(c) Loaded to any interchange point with the home line, provided, however, that the car must be routed over the home line where common rates apply, or

(d) It may be returned to the delivering line, if in a homeward direction, but not otherwise. Traction lines and such other lines as may be designated by the American Railway Association may return foreign cars to the delivering line, a list of such roads to be published in the Official Railway Equipment Register.

(B) Short routed to the owner at the nearest junction point, without charge. Such a car may be loaded in accordance with these rules, by any line over which it passes en route home.

RULE 4. (A) A loaded foreign car may be delivered to a switching road to be unloaded within the switching district. Such delivery shall be indicated on the junction report by the letters "F. U."

(B) If the car belongs to a direct connection of the switching line at that point, it must be handled in accordance with Rule 2.

(C) If the car belongs to a direct connection of the switching line, outside of the junction point at which it was received it must be loaded in accordance with Rule 2, or it may be returned to the delivery line, provided its movement is confined to the switching territory.

(D) If the car belongs to an indirect connection of the switching line, it must be loaded in accordance with Rule 3, or returned empty to the delivering line, provided its movement is confined to the switching territory.

(E) An empty foreign car belonging to an indirect connection of the delivering line, and the line to which it is delivered, may be delivered to a connecting road for return loading. Such delivery shall be indicated on the junction report by the letters "F. L." The loading road must route the car in accordance with these rules. If a car is loaded within a switching district the carrier line shall be responsible for its correct loading.

(F) A car belonging to a direct connection of the switching line, outside of the switching district, may be delivered to it to be loaded within the switching district and returned to the delivering line. The carrier line shall be responsible for its correct loading and the car will be treated as belonging to a direct or indirect connection of the carrier road.

(G) A car belonging to a direct connection must not be delivered to a connecting line for return loading, unless it is to be loaded within a switching district, it being the intention that once a foreign car gets on to any road that has a connection with the owner *it must go home.*

A BOX CAR POOL

Box cars are to be pooled on the basis of ownership, each line to be entitled to its ownership in box cars or the equivalent. The pool shall be based upon the following principles:

1. No box cars of less than 60,000-lb. capacity are to be put into the pool.

2. In order that cars may be loaded in both directions, so far as practicable, a definite standard of excellence shall be established, and no cars shall be offered in interchange that do not measure up to this standard.

3. All railroads, including switching and belt lines, shall, within five years, be required to provide themselves with sufficient equipment to take care of their proportion of the through haul, as well as their local requirements; provided, however, that such roads may be excepted from this order by the American Railway Association as it may deem necessary.

4. Until such time as purely switching lines, belt lines, and so-called tap lines, which originate traffic and own no cars, provide themselves with their quota of equipment, such cars as are delivered to such lines will be charged to the delivering line until they clear to another carrier line.

5. Each member of the pool shall be entitled to the number of box cars on its line, including those charged to belt, switching or tap lines, as provided in Rule 4, as contributed by it to the pool.

6. During a car shortage, when any member line is short of its ownership, it shall be entitled to such compensation per car per day, in addition to the regular per diem, for the cars it is short, in accordance with the cars contributed to the pool, as may be determined upon by the members of the pool.

* Subscriber—A road which is a subscriber to the Per Diem Rules agreement.

** Non-Subscriber—A road which is not a subscriber to the Per Diem Rules agreement.

7. Equipment shall be equalized during times of surplus in an equitable manner, either by the actual movement of cars, or by a proper credit to a line having a surplus, in order to avoid unnecessary movement of cars when they are not needed by the deficient lines.

8. The pool commissioner shall have supreme authority in the matter of handling cars, and his instructions shall be obeyed implicitly. There shall be an adequate penalty established for failure to move cars as ordered by the commissioner, and also a penalty rate paid over and above the regular established per diem rate on all cars held in excess of ownership during a car shortage.

9. Per diem settlements shall be made at the current per diem rate with all car owners. Any excess paid by lines having more than their allotment shall be paid to the pool, to be distributed by them to the deficient lines.

CODE OF PER DIEM RULES

RULE 3. Foreign freight cars must be handled as prescribed in Rules 1, 2, 3 and 4 of the Code of Car Service Rules of the American Railway Association, subject to the following penalties:

Diversion Penalty: A road diverting a foreign freight car shall pay to the owner thereof the sum of $50 in addition to the per diem.

Time Penalty: If a foreign freight car is in the possession of a road for any period over 30 days, computed as per Rule 1, Paragraph E, such road shall pay to the owner thereof a penalty rate of $0.50 per day for the first 30 days' excess time, $2 per day for the second 30 days and $5 per day for any additional period in addition to the per diem rate for the further use of the car; except where such penalty is not reported to car owner within 6 months after the last day of the month in which it accrued, the time penalty rate shall be increased $0.10 per car per day.

In case either of the above penalties is not reported to the car owner within 12 months after the last day of the month in which it accrued, the car owner shall have the right to show a deduction of the amount in its first open per diem report.

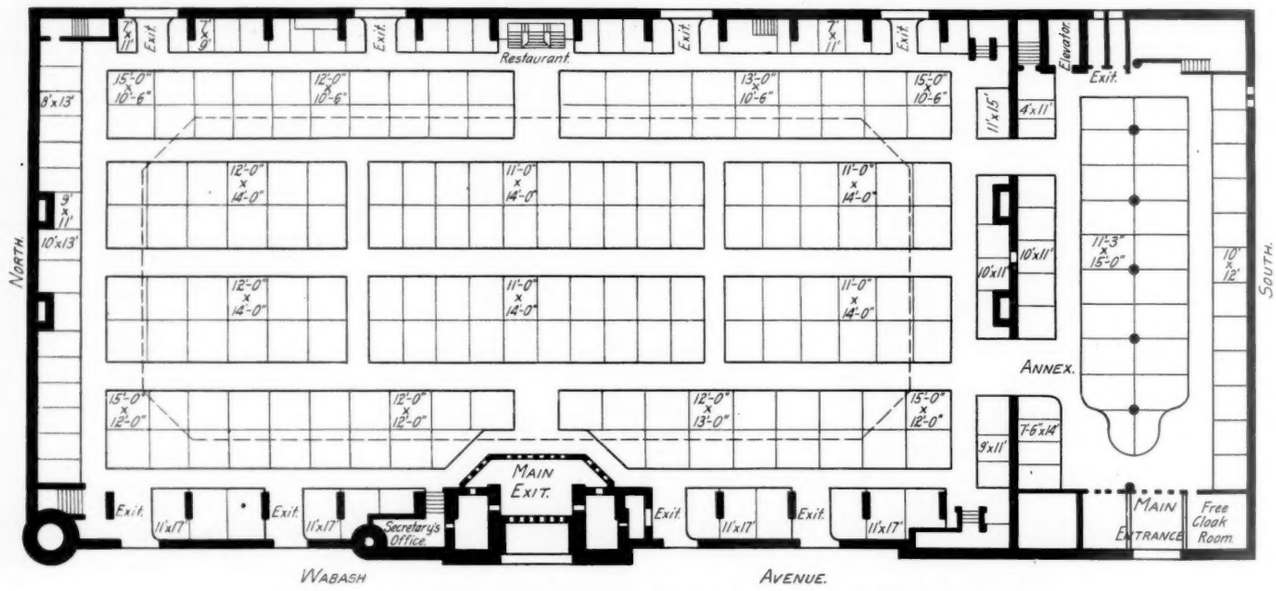
Where a car is delivered to a switching road to be loaded or unloaded and is returned to the delivering line, or where a car is delivered empty to a carrier road for return loading, such delivery will not break the time penalty, providing the car is returned within 30 days after delivery.

PLANS MATURED FOR N. R. A. A. EXHIBIT

The National Railway Appliances Association has made full announcement to its membership of the plans for the exhibition of railway appliances to be held in the Coliseum and Annex, Chicago, March 18 to 21, 1918, inclusive. This annual exhibit has grown from a small beginning until it is now one of the largest and most successful of its kind, the principal difficulty confronting the management in recent years being to provide the space desired by those applying for this privilege. The association expresses the confident hope that the tenth exhibit, to be held next March, will be one of the best in the history of the organization.

A floor plan of the exhibition space, shown in the illustration, has been sent to interested companies. Special attention is called to the fact that the main entrance to the Coliseum is through the Annex, as in the 1917 exhibition. The principal change in the floor plan is the elimination of the wide center aisle running across the building opposite the main exit and a slight rearrangement of the spaces to provide 31 additional booths. The association received 68 applications for exhibit space last year which could not be filled and of these 31 companies availed themselves of the privilege of membership in spite of the fact that they could not secure space in the Coliseum.

The prospects for a successful exhibit this year are highly encouraging. Within a week of the mailing of the notices to members, 45 applications for space were received and on October 22, two weeks before the spaces will be allotted, over 80 per cent of the area available had been applied for.



Floor Plan of Coliseum and Annex for the N. R. A. A. Exhibit Next March

The general arrangements for the exhibit are the same as in previous years, although a number of minor changes are announced. A new plan for handling power and lighting service will be used and no nickel telephones will be placed in the booths, as in past years. The association will provide ample telephone service at the southwest corner of the main building which may be used at 5 cents per call. The association will also provide uniformed attendants and messengers to take care of incoming calls. Another important provision for the 1918 exhibit is that no one will be allowed in the building during the erecting and dismantling period without a workman's pass. The detailed arrangements for this exhibit are in charge of the secretary-treasurer, C. W. Kelly, 349 Peoples Gas Building, Chicago.

Western Railway Club Meeting at Chicago

Locomotive Terminal Delays the Main Topic of Discussion. Addresses By H. T. Bentley and Samuel O. Dunn

THE Western Railway Club met at the Hotel Sherman, Chicago, on October 15. H. T. Bentley, superintendent of motive power and machinery of the Chicago & North Western, read a paper on Locomotive Terminal Delays, which was followed by considerable discussion in which A. R. Kipp, president of the club, and mechanical department officials, particularly roundhouse foremen, participated. Samuel O. Dunn, editor of the *Railway Age Gazette*, delivered an informal address, which, together with Mr. Bentley's paper, is abstracted below.

LOCOMOTIVE TERMINAL DELAYS

By H. T. Bentley

Superintendent of Motive Power and Machinery, Chicago & North Western

While the subject of this paper is Locomotive Terminal Delays, it might just as well be called "Keeping Engines Moving, or How the Round House and Shop Men Are Helping to Win the War." One of the vital needs of the country at this time is a prompt movement of engines from their arrival at the coal shed until they are ready for service again so as to handle properly not only the troops, but also the ammunition, grain, and other commodities that are just as necessary to bring the war to a successful ending as are the boys in the trenches.

I am not going into technical details, but will simply enumerate a few things that help to expedite engine movements at terminals. First of all the round house foreman must be a hustler and a good all around man, one who has the good will of the men. I believe the round house foreman is entitled to more of our consideration than is sometimes given him.

Report of Delays to Engines in Terminal Service

Date_____From_____To_____

ENGINE	Arrived	Time Ordered	Departed	Total Delay	CAUSE OF DELAY

Foreman_____

Report for Recording Delays to Locomotives at Terminals

The following are some of the many good investments for a busy round house.

Coaling facilities that will coal engines quickly without spilling coal on the ground to be shoveled into cinder cars or otherwise wasted.

Clinker pits where cinders can be handled with the greatest dispatch and the least amount of labor.

Sanding apparatus that will quickly deliver the sand in the box instead of on the boiler and the running board, and so located that the tender can be filled at same time.

Penstocks or water tanks properly situated so that if a number of engines are waiting to be coaled, the last engine in can get water without having to switch all of the others or wait until they are moved up past the penstock. In the case of a busy terminal, a separate penstock for switch engines is a great time saver. All spouts should be large enough so that no unnecessary delay occurs when taking water.

An engine washing device located outside with proper drainage so that water will be carried off to the sewer.

The turntable should be power operated and the tractor house so located that the operator can see the rails at both ends. A recent installation of a large table came to my notice where the operator could not properly see the rails at either end, making it necessary for two men to be employed where only one would have been needed if the house had been properly located.

It is hardly possible under present conditions to get along without having the use of oxy-acetylene and electric welding outfits in a round house. Numerous terminal delays can be saved with these outfits almost every day, especially in bad water territory where firebox and flue troubles are serious. The welding of flues does overcome delays and the extension of this practice should be considered, although we are told, that unless equipped with welding apparatus in the round houses to follow the work up, there may be some difficulty experienced in case of leakage.

Labor saving devices of all sorts never were in such great demand as at present, and the men who were far sighted enough to equip their shops, engine houses, and engines with them are now reaping the benefit.

A portable electric light cluster with a reflector is a great help to a difficult night job; there ought to be one or more in every busy round house. For reducing terminal delays they are a good investment and easily made.

The dropping of wheels to replace driving box brasses and take up lateral motion is a big job, but with proper devices applied to your engines, much terminal delay can be overcome; we have recently had two engines come to the shops for the first time in five years for driving wheels to be removed. During that time, side play was taken up, new brasses applied and tires changed without dropping the wheels.

The hot water washout plant has been in service long enough to fully prove its usefulness in conserving coal, water and time.

The emptying of sand boxes to make repairs to sanders or to get rid of wet sand is the cause of lots of delays and profanity, both of which can be overcome by proper attention in shops by knowing that joints are water tight and using a sander that can be repaired from the outside without the necessity of emptying the box and spilling sand over the machinery.

The retaining of heat in a boiler, where such action can be taken, not only helps overcome delays, but conserves wood and coal, both of which are in great demand. In some tests made a few months ago, it was shown that it took about twice the amount of steam from the blower line to raise steam on an engine when cold, as compared with one with hot water in the boiler. We periodically talk about covering stacks and sometimes do it, but after a while the practice is dropped. We all know that heat, or its equivalent, dollars and cents, can be saved by covering the stack of a hot engine, then why don't we do it?

What delays can be charged up to an inadequate blower

system, and why doesn't someone get up a device that will be effective and more economical. The condensation that takes place in a blower line from the boiler room, around the house and then to the locomotive is simply a waste of coal that some inventive genius should be able to overcome. A blower line is a good condenser, but not a very economical medium for steam raising.

The firing up of locomotives is a job that is done hundreds of times every day, and if any member has a method of doing this more economically and quickly than by the practice of using wood and coal and will tell us about it, we may be able to save a few minutes or a few shovels of coal on each fire.

Men speeding up their work in the shops and round houses, and doing it well are just as much entitled to credit as people in other occupations who are doing their bit for this glorious country of ours.

The drawing office is sometimes responsible for delays in round houses, and if the round house foremen were consulted more often by the mechanical engineer, many annoying delays due to poor design or inaccessible parts would be overcome.

It is possible that some of us are still doing some things that are not absolutely necessary, you might call them "frills." A short time ago we held a staff meeting at which this subject was discussed, and decided to postpone doing some things not detrimental to the service, until a more opportune time.

Engineers can save delays at the terminal by correctly reporting the work that actually needs doing; the work slip that shows a bad pound on the right side, or packing blowing without saying where, or the air pump not working, or something wrong with the injector, causes lots of unnecessary work looking for a defect that should have been located in service and which in some cases is difficult to find on a dead engine. Coal can also be saved by the engine crew not coming to the clinker pit with a lot of green coal in the fire box, as it is only knocked out and wasted; we cannot afford to waste coal at any time, but now to do so is almost a crime.

The open sided clinker pit with a depressed track for cinder cars is standard with us, but with the present labor shortage it is a question whether there is not something that requires less labor and can handle cinders more economically.

A copy of our "Delays to Engines in Terminal Service" report is shown herewith, from which it will be seen that very little work is required to give information as to the total delay and the cause.

A more elaborate report used by the Pennsylvania Railroad was described and illustrated in the *Railway Age Gazette*, pages 595 and 596 of the October 5, 1917, issue, and a full explanation is given as to the method of handling it. While these reports, of course, require some one to keep track of all movements and delays, yet the information given enables the master mechanic to put his finger on irregularities and correct them.

Most of us are able to say what we could do if we had all the improvements we might think necessary, but as it is impossible to get some of those things now, it is up to us to utilize the facilities we have to the best advantage to keep the wheels moving; by getting good results under those conditions we really are bigger and better men than if surrounded with every convenience for turning engines promptly. Difficulties bring out a man's resourcefulness, and the more difficulties successfully overcome, the more valuable is that man to his employers.

Discussion

Some roads reported that at the present time the average service obtained from locomotives has been increased to 6,000 miles per month in freight service and 9,000 miles per month in passenger service. The practice of filling tenders not quite to the top has been adopted by one road to conserve coal and save labor at the terminal. The necessity for power operated devices for handling cinders was emphasized by one of the speakers, who told of a terminal employing eight laborers on this work, where it was necessary to hire 42 new men in a single month. Several roads were reported to be using stack covers; some are attached to the stack, while others are suspended by chains inside the smoke jack. It has been found necessary to have an opening from 2 in. to 4 in. in diameter in the cover to prevent the engine sweating. As an instance of the special methods used to keep power in service, a foreman at one locomotive terminal told how one-eighth inch was removed from the flanges of an entire set of drivers without dropping the wheels by means of a cutting tool attached to the frame of the locomotive.

ADDRESS BY SAMUEL O. DUNN

The presentation of Mr. Bentley's paper was succeeded by an informal talk by Samuel O. Dunn, editor of the *Railway Age Gazette*, on the railway situation. Mr. Dunn called attention to the fact that the railways in the year 1916 handled about 25 per cent more freight traffic than in 1915, and that on top of that they are handling in 1917 a vastly larger traffic than they did in 1916. The freight traffic handled in July, 1917, was 20 per cent greater than that handled in the same month of 1916 and 48 per cent greater than that handled in the same month of 1915. The increase in July, 1917, over July, 1915, was equal to the total freight traffic handled in a year before the war by the combined railways of Japan, Spain, Sweden, New South Wales, Switzerland and Brazil. This great increase in traffic has been handled with practically no addition to the available equipment, which showed that there had been a great augmentation of the efficiency with which equipment was being handled. In spite of the fact that the total business being handled, passenger as well as freight, is now the greatest in history, the tendency of net operating income is to decline.

In the first six months of 1917 gross earnings were 12.2 per cent greater than in the same months of 1916, while operating expenses were 18½ per cent greater, taxes were 17½ per cent greater and net operating income was 3.7 per cent less for the railways as a whole.

Furthermore, during this period transportation expenses increased over 26 per cent, while expenditures for maintenance and equipment increased only 12½ per cent and expenditures for maintenance of way only 7.6 per cent. These increases were relatively so small that they would not cover the increased cost due directly to advances in wages and in the prices of materials and the only rational conclusion that can be drawn is that railway properties are not being maintained to as high standard as they were a year ago. When we entered the war it seemed that the most difficult problem of the railways would be that of moving the tremendous traffic which would be offered to them. Thus far, however, they have been able to do this and it begins to appear that the problem of adequately maintaining the properties will prove to be an even more difficult one. The obstacles encountered in getting a sufficient amount of labor and sufficient materials and the high wages of labor and the high prices of materials are likely to make the problem of maintenance increasingly difficult, but the speaker believed that the loyalty, the ability and the energy of the railway officers and employees of the country would find means for solving the problem. The fact that net earnings are declining while the roads are handling the largest traffic in their history shows the need for advances in rates, and Mr. Dunn predicted that if the railways continued to render the splendid service to the public that they have been rendering since the country entered the war public opinion would compel the regulating authorities to grant the needed advances in rates.

State Railroad Legislation Passed in 1917

Laws Affecting Strikes, Grade Crossing Protection, Wage Payments and Trespassing on Railway Premises

SOME of the more important of the 140 laws relating to railway operation passed by state legislatures in 1917 are abstracted below. Similar laws passed in different states have been grouped together as far as possible.

Labor Legislation

New Jersey House Bill 223 repeals the excess train crew law of 1913 and empowers the Public Utilities Commission, after notice and hearing, to direct any railroad to employ such a number of employees on its trains as the commission deems necessary to enforce safe, adequate and proper service for the protection of the public and the employees of the road. The act prohibits the reduction of the number of men in train crews without the authority of the commission.

Utah House Bill 10 and Minnesota House Bill 18 authorize the organization of labor unions and prohibit state courts from granting injunctions in any case growing out of a labor dispute unless necessary to prevent irreparable injury to property or property rights, for which there is no adequate remedy at law. New Hampshire House Bill 322 prohibits any employer from soliciting or advertising for employees during a strike without stating plainly that a strike exists.

Ohio House Bill 107 and Michigan House Bill 116 prohibit a railway from discharging or disciplining an employee on information involving his honesty, integrity or a breach of rules furnished by a special agent, detective or spotter, without advising the accused of the specific charges against him and giving him an opportunity to be heard.

Wisconsin Joint Resolution 72 declares against the setting aside or abatement, even temporarily, during the war, of laws designed to safeguard the rights of laborers.

West Virginia Senate Bill 62, North Dakota Senate Bill 78, New Mexico House Bill 24, Nebraska House Bill 33, and Tennessee House Bill 264 require railroads to pay wages semi-monthly.

Laws Affecting Trespassers

South Dakota House Bill 355, New York House Bill 937, New Hampshire House Bill 453, Wyoming Senate Bill 53, and Connecticut State Bill 61, although differing somewhat in their provisions, all aim to prevent trespassers from stealing rides on railroad cars or locomotives. The Wyoming bill makes conductors in charge of cars or trains special constables with authority to arrest offenders and deliver them to the first available sheriff or deputy sheriff. House Bill 116 passed by the same legislature vests similar powers in enginemen. The New Hampshire and South Dakota bills have provisions similar to those in the Wyoming laws.

Iowa House Bill 381 prohibits the occupation of a car or locomotive by force and without the consent of the persons in charge of it. It likewise makes it unlawful for any one to enter a car or engine with a dangerous weapon for the purpose of committing a public offense. Michigan Senate Bill 261, Connecticut Senate Bill 61 and New York House Bill 937 make it unlawful for unauthorized persons to walk upon or along the railway tracks or right of way except at a public or private crossing. The New York law provides specific penalties, a feature heretofore lacking; and this change will greatly facilitate enforcement.

New Hampshire House Bill 584 provides a maximum penalty of $5,000 or ten years imprisonment, or both, for any one who injures, destroys or damages railroad property or tampers with a railway switch.

Grade Crossing Legislation

Vermont Senate Bill 106 requires steam railways to expend not less than $75 per mile each year in the removal of grade crossings, specifying that the most dangerous crossings be removed first.

Illinois Senate Bill 409 authorizes the Public Utilities Commission to direct the highway commission to abolish, alter or relocate railway crossings at highways or public roads where such a change is necessary to preserve or promote safety. Wisconsin Senate Bill 572 empowers the Railroad Commission to establish the grade of of the tracks of any railroads throughout a county containing a city of the first class in anticipation of a future separation of grades at streets and highway crossings.

Maine House Bill 650 authorizes the Public Utilities Commission to fix the maximum speed at which trains may be run over grade crossings and prohibits the unreasonable or negligent obstruction of such crossings by engines, tenders or cars.

Illinois Senate Bill 409 requires that drivers of self-propelled vehicles reduce speed to a maximum of 10 miles an hour on approaching grade crossings and come to a full stop at crossings where stop signs are posted.

Connecticut Senate Bill 580 directs the Public Utilities Commission to determine what crossings are such that public safety requires self-propelled vehicles to stop and requires that prescribed stop signs be set up at these places. New Hampshire House Bill 68 requires drivers of self-propelled vehicles to reduce their speeds to 10 miles an hour when approaching within 100 feet of highway grade crossing.

Maine Senate Bill 349 authorizes the Public Utilities Commission to require steam railways to install, maintain and operate automatic signals at their own expense at highway crossings where, after notice and hearing, it is determined that signals are necessary to protect public safety. The act defines automatic signals as devices which are audible and visible by day and night and which give warning of the approach of trains.

Smoke Prevention

Minnesota House Bill 395 authorizes cities of not less than 20,000 or over 50,000 inhabitants to enact ordinances with penalties to regulate, prohibit or abate the emission of dense smoke within their limits.

Wisconsin House Bill 359 empowers the Railroad Commission to authorize railways to use electricity in lieu of steam as a motive power or to use both whenever in the opinion of the commission, upon petition and after hearing, a total or partial substitution of electricity for steam will be beneficial to the railroad and to the community or territory served by it.

Marking Vehicles Carrying Explosives

Montana Senate Bill 51 and New Jersey House Bill 434 provide that vehicles carrying explosives shall display a red flag bearing the word "danger" on a pole at the front end, or in lieu of the flag the words, "Explosives, Danger," in white letters at least six inches high, printed on or attached to the ends and each side of such vehicles. The bills also prohibit the placing of metal tools or pieces of metal or matches in the body of vehicles containing explosives. The bills do not apply to explosives transported in conformity with regulations of the Interstate Commerce Commission, or

to military or naval forces, nor to explosives carried in small quantities.

Car Service Regulation

Kansas Senate Bill 107 requires railways to furnish cars to shippers within a period not exceeding three days for an order of ten cars, not more than six days for between 10 and 30 cars, and not more than ten days for 30 cars or more, after written application has been made to the superintendent, agent or other person in charge of transportation. Cars must be placed at the points indicated in the application and in the order in which the applications are made without preference to any person. In emergencies respecting the transportation of any particular product, the Public Utilities Commission may require that the class of cars needed to handle the commodity be furnished within such a reasonable time as it may prescribe.

North Dakota House Bill 195 requires railways to furnish and distribute cars to elevators in proportion to their daily grain receipts.

Nebraska House Bill 40 authorizes the Railroad Commission, if it finds after a hearing that the supply of cars on a railroad is inadequate, to issue an order prescribing rules for the distribution of cars to divisions and stations of the railroad and to shippers at such stations based upon the relative volume of shipments from each division, station or shipper.

Nebraska House Bill 419 requires railways to transport live stock from the point of receipt to destination at a minimum average speed of 18 miles an hour on main lines and 12 miles an hour on branch lines when trains contain six or more carloads, and at a minimum average speed of 12 miles an hour on main lines and 10 miles an hour on branch lines when trains contain less than six carloads. The computation of speed does not include the necessary time consumed in picking up, setting out, loading or unloading carloads of stock at stations, the time consumed awaiting consolidation with main line trains at junction points—not exceeding two hours at each junction point—nor the time consumed in watering and feeding the stock. The law does not apply to the movement of livestock from Omaha for feeding or breeding purposes and permits the carriers, with the consent of the Railway Commission, to designate three days weekly as stock shipping days on branch lines not over 125 miles long.

Minnesota House Bill 40 requires the delivery of livestock to chutes at stockyards to which they are billed within five hours after the arrival at a terminal, provided the stockyards are within a radius of 20 miles. Of this time, switching roads whose principal business is transferring livestock from terminal interchange points to stockyards for unloading, shall be allowed not more than three hours after receipt from the carrier road to deliver the stock to chutes.

Texas House Bill 173 prohibits railways from confiscating or otherwise converting to their own use any carload shipments or substantial portions thereof without the express consent of the owner or consignee. The law does not apply to freight damaged or intermingled with other freight in wrecks, or refused or unclaimed freight.

Florida House Bill 4 makes it unlawful for a carrier which receives a line haul to make any charges for switching a car to or from a loading or unloading point located on its line, sidetracks or spurs. This law applies to intrastate shipments only.

North Dakota Senate Bill 86 requires railways to attach to every stock freight train containing 25 or more cars of livestock a sleeping car sufficient for the accommodation and protection of persons accompanying stock.

Missouri Senate Bill 181 requires railroads to stop all regular passenger trains, whether wholly or partially engaged in intrastate passenger service, at county seat stations and at junctions where stations are maintained for the reception and discharge of passengers.

Nebraska House Bill 67 relieves railroads from the necessity of operating exclusive passenger trains on lines constructed subsequent to January 1, 1917, until such lines earn to exceed seven per cent per annum according to the formula of the Interstate Commerce Commission.

Laws Affecting Locomotives

Arkansas House Bill 191 makes it unlawful for a railway to operate an engine unless so constructed that the engineman and fireman are located under the same roof at all times while firing or operating the engine.

Ohio Senate Bill 5 and New York Senate Bill 199 require railroads to equip locomotives with automatic or foot power control firebox doors.

California House Bill 942 requires that steam locomotives be equipped with automatic bell ringers so constructed that they may be set in motion from either or both sides of the locomotive cab.

Grain Leakage

Kansas Senate Bill 249 requires railroads to give written notice to consignors of all leaks or defective cars and also written notice within ten days thereafter, of the time, place and extent of the repairs made while the car was in transit. The act applies only to intrastate shipments of bulk grain.

Montana Senate Bill 33 requires railways to furnish box cars for the transportation of grain or other commodities in bulk, of such construction and in such order that they will not leak. The act also requires railways properly to clean and cooper box cars which have been placed for loading and which are not in such condition as to afford safe transportation to such commodities. If cars are not repaired within 24 hours after written complaint by a shipper to the railroad agent, or if cars are placed at a siding where no railroad representative is located, shippers may have repairs made and recover the cost from the railroad.

Slaughter of Livestock on Right of Way

Nevada House Bill 150 and New Mexico House Bill 18 require railways to pay owners the fair market value of livestock killed or injured by trains in case the accident is due to the failure of the railway to construct fences on each side of its right of way.

Nevada House Bill 251 requires railways to provide cattle guards at public highway crossings and to pay the owner of livestock the full market value of animals killed and injured because of the lack of such protection.

Movement of Buildings Across Railroad Tracks

Oklahoma House Bill 325 and Missouri Senate Bill 387 require railroads to furnish competent workmen when the movement of a building over a railroad track outside the limits of a city of the first, second or third class makes it necessary to cut, remove, raise or interfere with telephone, telegraph or electric wires or poles. The Oklahoma bill provides that the railway shall be reimbursed for such expense but the Missouri bill stipulates that the expense shall be borne by the carrier.

Miscellaneous

Vermont House Bill 148 prescribes a fine of $5 for any passenger on a common carrier who publicly drinks intoxicating liquors as a beverage. Connecticut Senate Bill 522 provides a maximum fine of $1,000 or a maximum imprisonment of 10 years, or both, for any railroad employee who, in consequence of intoxication or any gross or wilful conduct or negligence, causes loss of lives or the breaking of a limb.

West Virginia House Bill 82 requires railways to provide suitable space for the transportation of sick and injured passengers traveling on cots or stretchers and provides that

no charge shall be made for such services other than the regular first-class fare.

Oregon House Bill 549 permits the collection or deduction by employers of reasonable amounts from wages of employees for medical, surgical or hospital care.

Oklahoma House Bill 490 prohibits the removal of railway shops or division points which have been located at a point in the state for a period of five years or more, without the permission of the corporation commission. If the commission finds that the sanitary or habitable conditions at the proposed new location would endanger or injuriously affect the health of employees or their families, it shall refuse permission to make such removal.

Kansas House Bill 770 prescribes specifications to which new caboose or way cars must conform.

RAILWAY REGIMENTS' TOBACCO FUND

The committee having in charge the work of raising among the railway supply companies of the United States a Railway Regiments' Tobacco Fund for the railway regiments that have been organized in this country has begun sending out circulars on this subject to railway supply companies and already a considerable number of subscriptions to the fund has been received. The subscribers up to noon on October 23 and the amounts of their subscription were as follows:

Ajax Forge Company, Chicago, Ill.	(to cover 15 months)	$150
American Manganese Steel Co., Chicago Heights, Ill.		10 a month
American Steel Foundries, Chicago		" "
Buda Company, The, Chicago	(to cover 3 months)	30
Bronze Metal Co., New York, N. Y.		10 a month
Bucyrus Co., South Milwaukee, Wis.		" "
Economy Devices Co., New York, N. Y.		" "
Camel Co., Chicago, Ill.		" "
Haskell & Barker Car Co., Chicago, Ill.		" "
MacRae's Blue Book, Chicago		" "
Madden Co., Chicago, Ill.		" "
More-Jones Brass & Metal Co., St. Louis, Mo.		" "
P. & M. Co., Chicago, Ill.		" "
Poole Brothers, Chicago		" "
Prendergast Co., Marion, Ohio		" "
Pyle-National Co., Chicago, Ill.		" "
Railroad Supply Co., Chicago, Ill.		" "
Railway Age Gazette, New York, N. Y.		" "
Railway Review, Chicago, Ill.		" "
Ryan Car Co., Chicago, Ill.		" "
Safety Car Heating & Lighting Co., New York, N. Y.		" "
Sargent Co., Chicago, Ill.		" "
Sherburne & Co., Boston, Mass.		" "
Standard Coupler Co., New York, N. Y.		" "
Standard Forgings Co., Chicago, Ill.		" "
Standard Steel Car Co., Chicago, Ill.		" "

The circulars asking for subscriptions and explaining their purpose only recently have been sent out and it is confidently expected that subscriptions will from now on flow in rapidly from railway supply concerns throughout the country. The amount being asked from each concern is only $10 a month, which is a small matter in itself but if as many subscriptions are received as ought to be the aggregate amount raised will be sufficiently large to provide a large part, if not all, of the "smokes" required to make the members of the railway regiments happy. As previously explained in these columns, the fund is being raised solely to purchase tobacco for members of the railway regiments which, as is well known, are composed almost entirely of former railway officers and employees.

It is a significant fact that the railways of the United States were the first industry to organize themselves to help the government win the war. It is perhaps no less significant that the members of the railway regiments are the first American soldiers to be actually under fire in the zone of hostilities in France. The work of these men is to operate military railways directly "behind the front," and while they do not themselves fight they are exposed to all the dangers of soldiers and are rendering a service which is as indispensable to the carrying on of the war as the men who will actually go into the trenches. Therefore, from every point of view they are the object of peculiar interest to the railway supply concerns of the country and it is hoped that a generous fund can be raised for them. "Now is the time to subscribe!"

ELECTRIC ARC WELDING *

By E. Wanamaker,
Electrical Engineer, Rock Island Lines.

The ability of the railroads to meet the demands upon their transportation facilities will be an important factor in the time required for the nation to become effective on the battle fronts. This discussion deals with one way of getting more transportation service out of the railway equipment in existence at the present time. Efforts spent in this direction are as patriotic and necessary as can be imagined. The patriotism of the civilians, particularly of the mechanical engineers in railway service, must not stop with the more or less superficial demonstration of loyalty to the Stars and Stripes. Those of us who cannot go to the fighting front must use the best of our abilities to get service, "and still more service," to paraphrase Lloyd George's quotation, from the motive power and rolling stock of the nation's railway systems.

The growing possibilities of the welding processes in motive power and rolling stock maintenance have been a source of amazement to every railway man who has come in contact with the practice. In cutting operations the application of the oxygen cutting processes saved from 50 per cent to 90 per cent of the time required to perform the operation. Yet in many locomotive shops and car yards the old practices are still followed and man power for this cause has not produced the maximum result.

There was a time when worn surfaces of the steel parts in a machine made it necessary to scrap those parts. It was only with the introduction of the autogenous welding processes that it became possible to stop this economic waste.

The repair of broken members of a machine has been another important work of the autogenous welding processes. Prior to their introduction certain steel parts could be welded in the forge fire, but the range of the work was limited and in many cases its cost was equal to the cost of a new part. Now, however, with the exception of cast iron parts, the failure of which would bring death and destruction, practically all parts of a machine which break may safely be repaired.

It is my purpose to point out so far as is possible how far these new practices may be utilized on steam railways to enable the railway systems of the country to meet the present emergency in the matter of service demanded from motive power and rolling stock equipment. The first of the new welding processes, which may properly be called autogenous processes, since the welding takes place more or less automatically, was the thermit welding process. This process found a wide application in the repair of broken steel parts on the railroads and the saving which resulted from its use without doubt aggregated millions of dollars.

Welding with the oxygen and fuel gas flame was the first widely used autogenous welding process. Since everyone is more or less familiar with the gas welding process, this paper will deal primarily with the electric welding process and an extended discussion of the gas process will be omitted. It is sufficient to state that at present the essential difference is in the method of producing the heat for welding, rather than in the fundamental principles involved.

Two Kinds of Arc Welding

There are two kinds of electric arc welding, known respectively as carbon electrode welding and metal electrode welding. In the former an arc is drawn between a carbon electrode and the piece to be welded and the metal to be added is fed into the arc in the form of a "melt bar." This process is not used extensively in railway work, due to the fact that

* Abstract of a paper read before the Western Railway Club.

welding may only be done in the horizontal plane in this manner and that the work is in general inferior to that which is possible with the metal electrode process.

The metal electrode process uses, as the name implies, a metal electrode,—the arc being drawn between the electrode and the piece being welded. The heat of the arc melts the metal of the piece and the metal of the electrode simultaneously. As the metal of the electrode melts it is drawn across the arc to the molten metal of the piece where a complete and homogeneous union is formed, which we call an autogenous weld. I say the metal of the electrode is *drawn* across the arc rather than that it falls through the arc advisedly, since it will flow straight overhead as well as straight downward. The temperature of the arc is extremely high at its center, actually vaporizing the metal to form the visible arc. With the exception of work with certain electrodes (manganese steel and slag-covered electrodes), the electrode is always made the cathode or negative—that is, the current of electricity flows *from* the piece being welded to the metal electrode. The reason for this practice is that the greatest amount of heat in an electric arc is liberated at the point at which the current passes from the solid medium to the heated vapor of the arc. Since the metal of the piece has more mass and conducts the heat away from the point at which the welding is being done more rapidly than the electrode, it is desirable to have the greatest amount of heat on the piece. Due to the composition of the manganese and slag-coated electrodes, it is necessary to make these electrodes the positive.

The voltage across the arc required for metal electrode welding is approximately 20 volts and direct current power is necessary. The various types of welding equipment are merely different plans for rendering available a rather heavy current at this voltage, and the power economy of the several systems for obtaining this result varies over a wide range.

Welding Organization

The successful application of the process requires the combination of three factors—engineering knowledge, craftsman's skill and enthusiasm. The direction of the practice on our road rests with the engineering staff of the mechanical department; the actual operation is done by skilled members of the boilermakers', pipefitters', machinists' and blacksmiths' crafts. We do not employ novices or apprentices in this work. Only the best men of the respective crafts are picked for operators. It has been plain from the start that only the highest type of craftsmen could secure the results we want and we have witnessed the growth of a considerable amount of pride and enthusiasm in the work among our operators. Even with the best of equipment and facilities for welding, we recognize the fact that it is absolutely necessary that only skilled operators be employed.

Under competent direction, the skilled and enthusiastic operator will seldom make serious blunders in the application of the process. I am quite certain some roads have had great difficulties in this line among operators made of green apprentices and "handy men." Further, we have found that the skilled craftsman, who is enthusiastic about the process, is continually finding new and profitable fields for its application.

The connecting link between the engineering staff and the operators is the supervisor of welding, who is fully informed on the range of approved applications and is also the most expert operator on the road. He is continually traveling between the shops keeping the practice of each up to date and seeing that everything runs smoothly. The operators at local points are under the supervision of the foremen in exactly the same manner as lathe operators or other craftsmen.

Standard Instructions

It was found essential that we compile a complete set of welding instructions, which comprise some thirty typewritten pages. It is the purpose of this set of instructions to standardize the major operations as far as possible. The extreme range of the application of the process has made it quite impossible, up to the present time, to standardize every single operation, but these instructions cover the field in such a general way that the operator is prevented from making serious welding blunders.

Results on Rock Island

The actual results of the operation of the welding equipment and the welding system on the Rock Island Lines have proven interesting. We have recently undertaken a rather extensive investigation of what the results are, and I am giving below some of the figures we have obtained as a result of about six months' operation of the complete system. The real answer to the question of whether or not the expenditure of some $40,000 for the installation of the system was justified lies in the actual facts—reduction of maintenance cost and actual gain in engine days with our present equipment. Tables I, II and III show some actual figures on the cost of repairing a small number of representative locomotive and other parts (for which we were able to obtain costs at a reasonable expenditure) by the gas and electric method, as compared with the old method which in many cases involved a complete replacement of the part. As compared with the old method, the saving of the electric process arises principally in the saving in labor. As compared with the gas process, the electric welding offers a saving in cost of producing heat and an appreciable saving in labor.

Table I.—Comparison of Electric Welding vs. Old Methods and Gas Welding

Description of parts	Cost old method	Cost gas welding	Cost elec. welding	Saving over old method	Saving over gas	No. engs.
Valve stems	$16.28	$15.26	$4.76	$11.52	$10.50	6
Eccentric straps	17.95	7.63	2.38	15.57	5.25	2
Cylinder cocks	1.36	1.04	.34	1.02	.70	1
Cross heads	356.40	120.23	37.73	318.67	82.50	13
Piston heads	47.93	32.74	10.24	37.69	22.50	4
Motion saddles	8.32	10.94	3.44	4.88	7.50	2
Frame braces	99.50	48.00	15.00	84.50	33.00	10
Crank arms	18.81	26.14	8.14	10.67	18.00	5
Rocker box castings	4.59	7.29	2.04	2.55	5.25	1
Transmission bar	2.80	4.38	1.38	1.42	3.00	2
Reach rod	1.25	1.09	.34	.91	.75	1
Rocker arms	20.75	13.24	4.24	16.51	9.00	6
Eng. truck equalizers	7.70	17.24	5.24	2.46	12.00	2
Truck frame	15.70	13.04	4.04	11.66	9.00	3
Trailer jaws	2.76	4.38	1.36	1.40	3.02	1
Extension piston cross head	6.30	4.36	1.36	4.94	3.00	1
Brake beams	1.69	2.18	.68	1.01	1.50	1
Brake hangers	5.10	7.45	3.40	1.70	4.05	3
Smoke arch brace	3.50	6.25	2.14	1.36	4.11	1
Air pump valves	2.50	1.33	.53	1.97	.80	1
Lugs on valve yoke	32.45	21.80	6.80	25.65	15.00	6
Push car wheels	6.00	10.56	3.05	2.94	7.50	4
Stilson wrench	1.60	1.09	.34	1.26	.75	1
Drill chuck	15.00	2.18	.68	14.32	1.50	1
Driver brake fulcrum	5.52	8.72	2.72	2.80	6.00	1
Wheel spokes	1,276.80	113.08	35.08	1,241.72	78.00	15
Main rod blocks	15.88	28.34	6.84	7.04	19.50	9
Triple valve gauge	20.00	3.27	1.02	18.98	2.25	1
Link blocks	72.24	51.49	15.49	56.75	36.00	20
Lift shafts	23.98	4.02	1.02	22.96	3.00	1
Quadrant	7.43	11.09	3.59	3.84	7.50	3
Wedges	55.04	69.69	21.69	33.35	48.00	25
Chafing castings	8.30	10.70	3.20	5.10	7.50	1
Plugging and building up holes	349.69	280.94	140.47	209.22	140.47	70
Tire rim keys	3.22	5.38	2.38	.84	3.00	2
Throttle stem	1.50	1.09	.34	1.16	.75	1
Reverse lever support	3.38	4.36	1.36	2.02	3.00	2
Smoke box	61.38	32.43	9.93	51.45	22.50	2
Hub liners	12.51	13.11	4.11	8.40	9.00	3
Strip on cross heads	25.32	31.00	12.66	12.66	18.34	3
Fire door handle	1.75	1.09	.34	1.41	.75	1
Boiler casings	63.21	30.30	9.32	53.89	20.92	1
Frame buckle	4.90	2.41	.91	3.99	1.50	1
Trailer yokes	5.25	6.45	1.95	3.30	4.50	1
Motion frame	9.10	10.17	4.17	4.93	6.00	1
Combination lever	1.03	1.75	.55	.48	1.20	1
Lugs on trailer hub	4.50	4.52	1.52	2.98	3.00	2
Center castings	76.81	28.56	9.06	67.75	19.50	3
Spring blocks	1.15	1.09	.34	.81	.75	1
Guide blocks	5.52	4.29	1.29	4.23	3.00	1
Binder	5.19	13.10	4.10	1.09	9.00	2
Steam pipes	3.79	5.12	2.12	1.67	3.00	1
Flat spots on tires	99.86	95.77	29.77	70.09	66.00	4
Cylinder bushings	35.65	9.40	3.40	32.25	6.00	1
Building up side rods	93.48	81.16	31.16	62.32	50.00	2
Grease cups	11.79	11.43	3.93	7.86	7.50	5
Stationary fire door	8.00	8.72	2.72	5.28	6.00	1
Cracks in tanks	372.69	113.62	35.16	337.53	78.46	14
Petticoat pipes	140.52	52.37	16.37	124.15	36.00	18
Filling worn spots	2,677.80	1,064.60	329.60	2,348.20	735.00	128
Pins	70.66	87.23	27.23	43.43	60.00	27
Reverse lever parts	103.02	74.04	23.04	79.98	51.00	38
Totals	$6,434.10	$2,755.74	$921.61	$5,512.49	$1,834.13	

TABLE II.—COMPARISON OF ELECTRIC WELDING VS. OTHER METHODS

Description of parts	Cost of other methods	Cost of elec. weld	Saving	No. engs.
Pedestals	$645.00	$45.24	$599.76	5
Tank frames	9.03	1.36	7.67	1
Shop tools	34.36	3.40	30.96	4
Piston rods	78.64	16.37	62.27	10
Sharp flange drivers	165.40	20.28	145.12	3
Truck side	194.00	10.20	183.80	4
Building up dr. axles	121.50	4.90	116.60	1
Steel car underframe	11.34	1.71	9.63	1
Building up car axles	315.00	25.24	289.76	..
Bushing staybolt holes	294.96	73.74	221.22	26
Welding flues	2,607.65	521.53	2,086.12	102
Frames	931.00	133.28	797.72	11
Cracks in fire boxes	2,431.27	297.17	2,134.10	92
Totals	$7,839.15	$1,154.42	$6,684.73	

TABLE III.—SUMMARY—COSTS AND SAVINGS PER MONTH

Cost of other methods	Cost of gas welds	Cost of electric welds	Saving over other methods	Saving over gas weld
$6,434.10	$2,755.74	$921.61	$5,512.49	$1,834.13
7,839.15	3,697.42*	1,154.42	6,684.73	2,543.00*
$14,373.25	$6,453.16	$2,075.03	$12,197.22	$4,377.13
COSTS AND SAVINGS—PER YEAR				
$77,209.20	$33,068.84	$11,059.32	$66,149.88	$22,009.56
94,069.80	44,369.04*	13,853.04	80,216.76	30,516.00*
$171,279.00	$77,437.88	$24,912.36	$146,366.64	$52,525.56

* Figures show cost of gas weld if work could have been welded with gas.

Our figures show that the saving effected by the electric arc welding system is being made at the rate of approximately $200,000 a year with our present equipment. This figure includes a direct saving as compared with other methods of about $136,000. The saving arising from the fact that we keep the engines in service a greater proportion of the time makes up the balance of the figure. Our figures show that this saving is being made at the rate of about 1,400 engine days per year.

Another way of looking at the same matter is that by the operation of the electric welding system we have obtained the service of four additional engines, without the additional investment, beyond that required to install the welding system. Four additional engines are worth approximately $200,000. The welding system installed complete cost about $40,000. The cost of operation of the system for a year is approximately $34,000. Figuring the value of the engines at $40 per day, we will pay for the operation of the whole electric welding system and will clear $22,000 from this feature alone of the operation of the electric welding system. However, we made important savings, as are shown in the preceding table, in the repair of parts on engines, where we could not show an actual gain in engine days of service, and this saving amounts to more than twice the saving arising in the increase of the number of engine days of service we get from our equipment. The net return secured on the electric welder investment amounts to approximately 500 per cent per annum. The net cost of the installation and equipment per unit under present conditions is approximately $1,300. The foregoing figures show rather conclusively that the installation of the electric welding system has been a profitable investment on the Rock Island Lines.

AMOUNT OF EQUIPMENT REQUIRED

In spite of the fact that we have probably a larger number of operators than any of the Western roads, we believe that we are far from fully equipped. The field of application of the process is continually widening. We are not able at present to handle all the operations which we have demonstrated to be practical and profitable. There is a totally unexplored field in maintenance of freight and passenger cars, which promises to eclipse in importance maintenance of motive power. There is a field in the repair of special track work, which we have not gone into up to the present.

POSSIBLE NEW APPLICATIONS

Within the last three years the arc welding process has been greatly improved and developed, both in the equipment for making the weld and in the welding material. It has, in fact, been developed to such a state that it will no doubt cause changes in many forms of construction, and the welding of fireboxes, tanks, etc., will become an economical practice. In the field of car construction and maintenance we may look for a wonderful development. For instance, today the cast steel truck side frame will last almost indefinitely where the electric welder is used in maintenance. By the intelligent application of spot welding with the electric arc, it will, no doubt, be possible to tie down bolts and nuts in the various parts of the rolling stock and motive power in such manner as to prevent their working loose, with the attendant very large saving in maintenance and operating expense. Quite recently we have been able, by using what is called a slag-coated electrode, to deposit steel having a carbon content of 50 per cent, which will enable us to do some work which we have been unable to do heretofore. We can successfully take care of the worn or damaged flanges of driving wheels, and should be able to reclaim much of the special work and rail steel by successfully building up the worn parts or broken sections.

ARC VS. GAS WELDING

It has been our purpose in establishing the practice in the welding field to look the facts squarely in the face and apply either the gas or electric process, depending on which shows the best results at the lowest price. At the present time we are of the opinion that the electric process will supersede the gas process on all steel welding and some of the rough steel cutting. In the cutting of boiler steel and all close cutting, however, and the welding of cast iron and the non-ferrous metals, the gas process has unequaled advantage. We are operating 75 gas torches and one acetylene generating plant on the same general principle as obtains in the case of the electric arc welding equipment. It is also best to use gas welders at all points where only occasional welding is done and which would not justify the investment necessary for the installation of an electric welder.

It is our belief that with approximately five times the amount of electric welding capacity we have at present, we can show at least five times the annual net saving, which would amount to a million dollars a year, and that we can with this equipment in operation show a saving of around 7,000 engine days per year, which means that we would be able to secure from our present engines a mileage that will equal that which could otherwise only be secured by the purchase of 23 additional locomotives.

DISCUSSION

While many roads reported large savings by the use of oxy-acetylene welding, only a few had installed the arc welding process. The field for electric welding is even wider than for gas welding. Contrary to the opinion generally held, cast iron can be welded by the electric process with success. In judging the efficiency of welding, consideration should be given to the elasticity of the metal in the weld as well as the tensile strength. Welding can be done with thermit where other processes prove unsuccessful; for instance, the welding of main and side rods with thermit was practiced with entire success up to the time when the locomotive inspection law, forbidding autogenous welding of such parts, went into effect.

AUSTRALIAN LINES ADOPT SUPERHEATERS.—In giving evidence before T. R. Johnson, who recently investigated the operation of the Victorian Government Railways, W. M. Shannon, the chief mechanical engineer, said that the adoption of superheaters should save 12½ per cent of the fuel consumption, and had 200 of the locomotives on the Victorian railways been equipped with superheaters there would have been a saving last year, when coal was 15s. 10d. ($3.80) per ton, of £11,378 ($55,300). At present coal was 21s. 1d. ($5.06) per ton, and, therefore, there would have been a saving of £17,000 ($82,620).

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., October 23, 1917.

RATE CASE TO BE REOPENED

The Interstate Commerce Commission, which has sometimes been accused of too great deliberation in acting on railroads' requests for increased rates, sprung a complete surprise on the railroads on Monday by showing a burst of war-time speed and announcing the reopening of the 15 per cent advance rate case, so far as the carriers in the eastern district are concerned, at a hearing on November 5 in Washington. The commission said that if the carriers' suggestion is well grounded that further financial relief is needed, it is obvious that such relief should be had promptly in order that transportation demands in time of war may be fully met. Coming within a week after the traffic executives of the eastern roads had appeared before the commission on October 17 to discuss a new proceeding for increased rates, in which the roads announced that it would take them 60 days to prepare their application, the announcement of the commission was a complete surprise. In fact, it is believed to represent the first case on record, at least of such importance, in which the commission has expressed a willingness to proceed more speedily than even the carriers had suggested, although it had set a new precedent by the expeditious way in which it handled the original 15 per cent case.

Although a suggestion that the matter be handled as a reopening of the 15 per cent case was made at the conference on October 17, George Stuart Patterson and the other representatives of the eastern carriers seemed to think that method out of the question and said that they would prefer to wind up the proceedings in the 15 per cent case and begin an entirely new proceeding with a view of securing the advances which were not allowed in that case. The reasons given were that the original case had become involved in a technical snarl as many of the proposed advances had not been cancelled as expected and were due to be resuspended on October 28, and as to many of the more important commodities involved, the carriers had filed new tariffs which had been suspended and set down for hearings in separate cases. These included the proposed increases on grain and grain products, live stock and fresh meats and petroleum and its products. Last week's conference was concluded with the understanding that George F. Randolph, commissioner for the lines in Official Classification territory would send the commission a formal letter stating the carriers' proposals concretely and that the commission would then give its answer. Without waiting for such a letter, the commission addressed to Mr. Patterson on October 22 and gave out to the press during the evening a letter by Secretary McGinty, saying that he was instructed by the commission to advise that after conference the commission is of the opinion that the carriers in the eastern district represented at the informal conference held on October 17 "are in error in suggesting what is virtually and for most practical purposes a continuance for at least 60 days of the 15 per cent case."

"The 15 per cent case is still open," the letter declared, "and before the commission. If your suggestion is well grounded that further financial relief is needed by the carriers. It is obvious that such relief should be had promptly in order that transportation demands in time of war may be fully met."

The letter continued:

"In its report of June 27 the commission referred at some length to war conditions. The commission reached the conclusion that only part of the requested increase should be then awarded, stating that the things which the carriers believed would happen have not hapened. But the commission added, p. 325:

> None of us know what the future may develop, . . . if it shall develop that the fears which have prompted the carriers are realized, or that their realization is imminent, we shall be ready to meet that situation by such modification or amplification of the conclusions and orders herein reached and entered, as are shown to be justified.

"The gist of your suggestion of October 17 is that the situation above referred to has now arisen; it is suggested that operating revenues do not now adequately overcome mounting costs. If this be so, the commission's stated purpose of meeting that situation will not have been attained by adopting your suggestion of a hearing 60 or 90 days hence. The commission is emphatically of the opinion that the evidence necessary to establish the full truth should be presented, without delay, in order that the carriers may be maintained in a position to do their full war duty.

"The record submitted in June indicated that the condition of the carriers in New England was less favorable than in any other section of the country. The commission is impressed with the desirability of being promptly advised as to their present situation, particularly as regards their ability to meet the increased cost of railway fuel.

"Since the outbreak of the war carriers and shippers alike have with praiseworthy alacrity co-operated to improve the efficiency of our transportation system. The results have been marked; but there is room for still further elimination of waste and increase of efficiency. On the other hand, there have been many misleading statements and publications with respect to the financial condition of the carriers, particularly in the eastern district. The exact situation should, in our opinion, be at once disclosed before the commission and to the public.

"The commission will therefore set down for further hearing the *Fifteen Per Cent Case,* so far as carriers in the eastern district are concerned, on November 5 at 10 o'clock in Washington, D. C.

"Other parties to this proceeding are being advised accordingly."

The commission on Tuesday issued an order further suspending until April 28, 1918, such rate schedules filed in connection with the 15 per cent case, as the roads were expected to cancel as a result of the decision in that case but which they had failed to cancel. The order applies only to those which shall not have been canceled on or before October 27.

TRANSPORTATION CO-OPERATION

The co-operative method of settling various transportation problems, which is prevailing to such an unusual extent in Washington nowadays, is well illustrated by the plan which was followed in the case of the order issued by the Fuel Administration prescribing a plan for apportioning a certain proportion of the coal mined on the Pennsylvania for its use for railroad fuel, and the similar order which has been issued for the Baltimore & Ohio. Although the order was that of the Fuel Administration it was actually drawn up by and represented the composite experience and knowledge of representatives also of the Interstate Commerce Commission, the Car Service Commission of the Railroads' War Board, the director of priority of transportation and the coal operators; and it also had behind it the authority of the various governmental agencies who participated.

There has been much discussion about the great centralization of arbitrary authority at Washington since the war began and some fears have been expressed that some of the agencies upon whom great power has been conferred would exercise it without taking all necessary conditions into consideration. Judge Lovett was given very broad authority under the priority of shipments act, which some people thought ought to have been conferred upon the Interstate Commerce Commission. The commission was given very broad powers over the distribution of freight cars under the Esch-Pomerene bill, which many thought would restrict the

operations of the Commission on Car Service, which itself was having rather a free hand; and the food and fuel administrations under the Lever law were given almost unlimited authority in certain directions. But, as the working plans of these various bodies have been worked out a plan has been developed, at least so far as transportation matters are concerned, by which none of these bodies has sought to act entirely by itself but an informal co-ordinating committee has been formed by which each makes use of the machinery, experience or knowledge of the other organizations; and experienced transportation men are attached to all of them.

The Interstate Commerce Commission has not issued any orders under the car service law, but it has placed at the head of its Division of Car Service a practical railroad man, E. H. De Groot, Jr., and one of its own ablest examiners, A. G. Gutheim, who has had a considerable experience in car service matters, and these men sit in the meetings of the Commission on Car Service and co-operate with it in various ways. Instead of developing a duplicate organization of its own the commission makes use of the machinery of the railroad organization, and as a result most of the directions of the railroad committee carry the support of the commission's authority. Where transportation of food is concerned Edward Chambers, head of the transportation division of the Food Administration, takes part in the work, and in connection with coal transportation, F. C. Baird, who is connected with the Fuel Administration, is called in. G. W. Kirtley, assistant to Judge Lovett, represents the authority conferred by the priority of shipments law.

There has been some confusion caused by the number of agencies which are engaged in trying to find cars for the hauling of important shipments of various kinds, but in fact most of the requests, no matter to whom addressed, shortly find their way by one channel or another to the Commission on Car Service, which knows where the cars are and how to get them moved.

As a result of this plan of co-operation action may be guided by more information than if each organization acted independently. Numerous appeals for priority orders are made based on fears for the future rather than on actual need. For example, the mayor of a large city recently wired a United States Senator stating that the street railway company in his city had only a three days' supply of coal on hand and urging that the senator arrange for a priority order. The company also appealed to the Commission on Car Service, which had its sub-committee in the city referred to investigate the situation. An actual check showed an 8-day supply of coal at each of two plants and 10 days' supply at each of three others and 60 cars of coal in transit, equal to six days' additional supply.

Coal Production and Distribution

The United States Geological Survey in its weekly report on coal production shows a slight increase in bituminous production during the week ending October 13, amounting to .7 per cent over the week of October 6. The total output, including lignite and coal coked, is estimated at 10,702,701 net tons. The average production per working day was 1,783,783 net tons, an amount but little in excess of the daily production at this season last year. Anthracite shipments increased from 42,362 cars to 42,824 cars. The principal factor limiting production, according to the statement, continues to be the shortage of cars. In the week ending October 6 losses from this cause, while smaller by about 2 per cent than during the preceding week, were 10.4 per cent of the full time capacity. The car situation improved noticeably in Indiana and to a lesser degree in Ohio, in both of which states losses from this cause have been severe. Little change was reported in Pennsylvania and West Virginia. The ratio of tonnage produced to full time capacity with the labor forces at present available was 71.9 per cent for all mines reporting. A decline in the index for Illinois attributed to labor troubles offset the improvement registered by Indiana and Ohio.

The Fuel Administration is giving immediate consideration to the problem of distribution of coal. The program as announced is briefly as follows:

"1. To provide an adequate and regular supply of fuel to the railroads, which is indicated by the order issued in connection with fuel supply of the Pennsylvania Railroad, which has been extended to include the Baltimore & Ohio, and will shortly be applied to other roads, as obviously the railroads cannot be expected to move the enormous amount of freights which they must handle, unless they are provided with sufficient fuel with which to do so, and it is in the interest of the conservation of equipment that this supply be obtained regularly from mines in close proximity to where the coal must be used. This will avoid the necessity as is now the practice, of holding several thousand cars of coal under load, for fuel purposes. It will also eliminate the necessity of transporting coal from one district to another, which will result in a saving of both cars and motive power, of which the railroads are short. It will further avoid confiscation of coal, which has been necessary in some instances in order to provide the railroads with sufficient fuel.

"2. When the adequate and regular supply of fuel had been accomplished, we expect to issue a rule confining coal cars to the coal trade, with such exceptions as are proven necessary, and to compel the return of empty coal cars to the originating line.

"3. The matter of preference in movement of coal cars, both loaded and empty, over other slow freight is receiving consideration, and it will undoubtedly be necessary to issue a rule at an early date, that preference be given to food and fuel. The situation today is the railroads are congested, and are unable to move to the market the coal which is offered them for transportation. This is due to the enormous amount of freight which they are called on to handle. We believe the program thus briefly outlined, when put into effect, will result in an increased car supply to the mine, and will accomplish an increased production sufficient for necessary requirement."

The Fuel Administration will announce within a few days its regulations limiting coal exports to Canada. Control of shipments will be exercised through the issuance by the Fuel Administration of special permits to shippers, who will be allowed to forward cargoes up to the amounts prescribed by the Fuel Administration without obtaining special export licenses. The plan is to hold Canada, during the rest of the year, to supplies not exceeding 10 per cent more coal than was received last year. This arrangement is based on a 10 per cent increase in production in the United States this year and permits the Dominion to share equally with the states of the union. Permits for shipment will be granted only to shippers who sent coal to Canada last year.

Increased Rate Procedure

The Interstate Commerce Commission up to October 22 had issued 44 fifteenth section orders, giving approval, without formal hearing, of the filing of tariffs containing increased rates. Over 1,100 such applications have been made by the railroads, but pending the determination of the procedure to be followed the commission has issued approval orders in cases of minor importance, a majority of which are for the purpose of correcting errors in tariffs on file. Order No. 41 approves the filing on five days' notice of tariffs of the Pennsylvania and the Buffalo & Susquehanna increasing rates on iron and steel articles between certain points in Trunk Line territory to make them the same as

rates in effect via other routes. The commission is expected soon to issue its general order establishing the procedure under the fifteenth section as amended, there having been practically no opposition to its tentative order at the hearing last week.

Economic Value to Govern Selective Draft

Provost Marshal General Crowder has announced a change in the machinery of the selective draft by which railroad employees and other men required for important industries need not be called for military service until after others whose economic value in their present occupations is considered of less importance.

For this purpose a series of questions will be addressed to those registered from which information will be obtained to enable the local boards to divide the men into five classes, based on the status as to dependents and the occupation. These classifications will determine the order in which men will be drawn for service and the physical examination will not be made except for the men who are called.

Skilled industrial and agricultural laborers are placed in class 2.

MASTER PAINTERS' CONVENTION

The proceedings of the first day of the Maintenance of Way Master Painters' Convention, which was held at the Hollenden Hotel, Cleveland, October 16 to 18 inclusive, were reported in last week's issue. On Wednesday, Bert E. Darrow, master painter, Atchison, Topeka & Santa Fe, Kansas City, Mo., presented the report of the committee on "Painting of Water Tanks." This was devoted largely to an outline of safe practices in the use of scaffolds, ladders, lines, etc., employed to gain access to the sides of the tub. The discussion of this report brought out interesting information concerning the practices on various roads.

W. S. Lacher, associate engineering editor, *Railway Age Gazette*, Chicago, spoke on the lack of reliable information concerning the amount of painting done by the railroads, particularly in the maintenance of way department, and that in consequence little information was at hand concerning the importance of the work done under the direction of the maintenance of way master painters. He presented some figures indicating the approximate amount of paint used by the railroads in maintenance work, and urged the gathering of more accurate data from which more reliable conclusions could be drawn. Following a discussion of this matter, the president was authorized to appoint a committee to investigate the subject.

An interesting discussion was held on the practice of painting lines along station platforms to indicate the safe limit for passengers to stand when trains are entering the station. The question arose as to the most suitable color, and after some discussion the convention adopted a resolution recommending the painting of a white line on all station platforms as a measure of safety to the public.

On Thursday morning, H. S. Bird, master painter, Philadelphia & Reading, Philadelphia, Pa., presented a committee report on the painting of bridges, which covered the materials and workmanship, and special measures to secure economy and insure the safety of the men employed. H. B. Wilson, master painter of the Bessemer & Lake Erie, Greenville, Pa., read a paper on the finishing of floors, and H. F. Jones read a paper on recommended practices for the master painter designed to secure the greatest efficiency and economy in his work, while insuring the safety of the painters and the public as well as other employes of the railroad.

Metal protection was the subject of a paper read by Philip L. Maury, Sherwin-Williams Co., Cleveland, Ohio. This comprised an outline of the requirements of an efficient metal covering with a discussion of the behavior of various materials in serving this purpose. Special reference was made to the present paint situation, illustrated by the manner in which the paint experts on the Council of National Defense, have recommended modification of government paint specifications with the effect of conserving valuable materials and greatly reducing the cost of the painting.

This was followed by the discussion of questions submitted during the course of the convention by various members, answers being given by members of a committee. W. S. Lacher gave an outline of the principles of the bonus system with special reference to its application to railroad work, particularly track maintenance. H. E. Conrad, master painter, Pennsylvania Railroad, Huntingdon, Pa., stated that the bonus system had recently been applied to track work on the Pennsylvania and that he was now at work on time studies, designed to apply it to painting. Another subject discussed was the protection of steel decks on track scales, in the course of which H. F. Jones stated that he had secured the best results by three coats of red lead, covered with a coat of graphite, the last two coats being sanded. This proved expensive, but gave very good results. The painting of concrete mile posts and other roadway signs was discussed, and the conclusion was reached that there was no difficulty if the concrete was thoroughly cured before the paint was applied. The scarcity of flax seed for the manufacture of linseed oil led to considerable discussion, some members being of the opinion that the industry would adjust itself to the new conditions, while others believed that the situation was serious. Attention was directed to the need of employing great care in the use of any substitute or adulterated oils.

Election of officers resulted in the following selections: President, H. E. Conrad, master painter, Pennsylvania Railroad, Huntingdon, Pa.; first vice-president, H. F. Jones, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.; second vice-president Ole Stubstad, master painter, Chicago & North Western, Winona, Minn.; secretary-treasurer, F. W. Hager, Ft. Worth & Denver, Ft. Worth, Tex. Chicago was selected as the place for the next meeting, which will be held October 15 to 17, 1918.

The convention was characterized by active interest in all of the discussions and a good attendance at all the sessions. Practically no time was given to social features. Wednesday and Thursday afternoons were occupied largely by visits to the plants of various paint and varnish manufacturers in Cleveland.

Bars Big Parcels to France.—Christmas and other gifts for American soldiers in France must be restricted to parcels of not more than seven pounds each. The Post Office Department has announced that it had been informed by the American postal authorities in France that, under the arrangements with the French railways, the French postal service is unable to carry in the parcel post packages in excess of seven pounds.

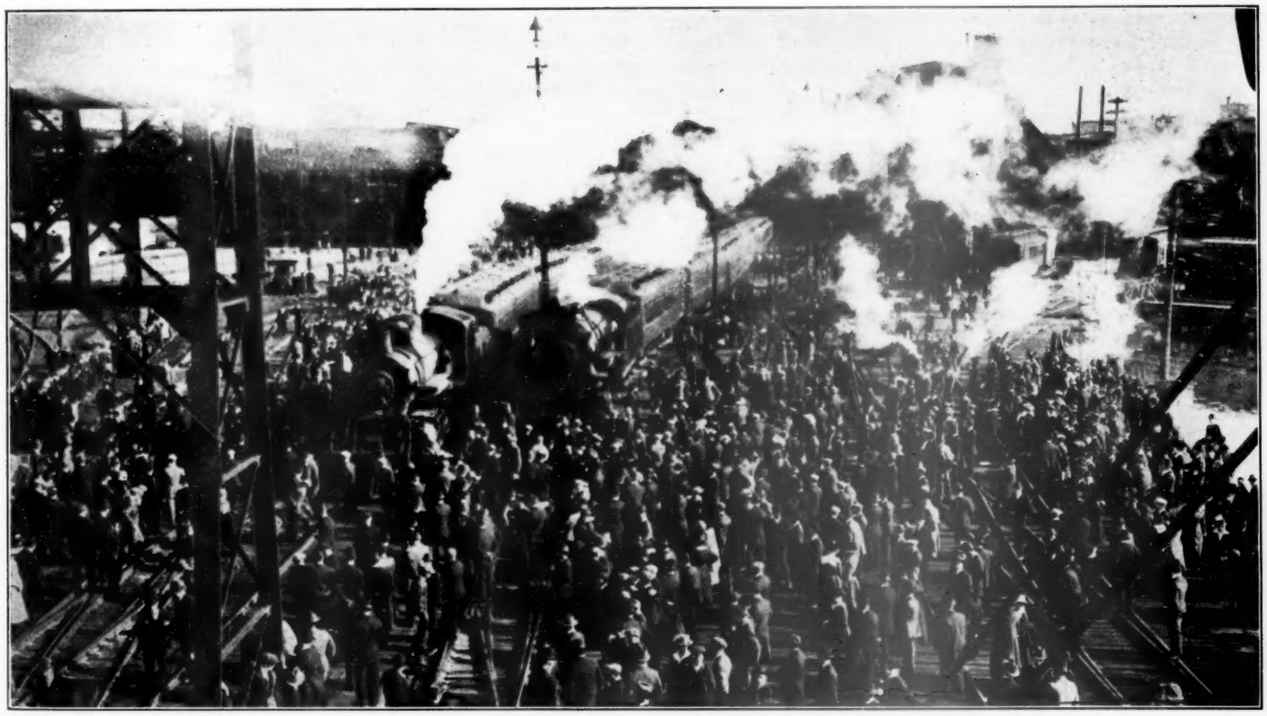
The Canal du Nord.—The Canal du Nord, the greater part of which is now behind our lines, has a double interest for British readers. With our neglected waterways, says a writer in the *Manchester Guardian*, we can hardly imagine a canal so overburdened with traffic that it can carry no more, and yet this was the case before the war with the water route from Paris to the Lille district. It represents the "very latest" in French canal engineering, and is 70 ft. wide and 8 ft. deep, and has 19 locks with an average lift of 20 ft.—more than 5 ft. greater than any ordinary canal lock in England, and 3 ft. 6 in. more than Latchford, the deepest on the Manchester Ship Canal. The canal, when completed, would have cost nearly £3,000,000 ($14,580,000) and electric towage was to have been adopted.

Carrying the Selected Men to Camp Devens

The Boston & Maine Has Made the Most of Having All Necessary Railroad Facilities Already at Hand

ABOUT two weeks have now passed since the completion of the movement of the second contingent of 40 per cent to Camp Devens at Ayer, Mass. On October 8 there were at that cantonment about 36,700 men in training for the new National Army, this representing 85 per cent of the total quota that was intended for the camp. The remaining 15 per cent will be called later this month, although there is some possibility that these men, the last contingent, may be sent, instead, directly to join a depot brigade of the National Guard now forming and in training at Westfield and Framingham, Mass.

The army officers who chose the site for Camp Devens apparently succeeded in picking almost the ideal spot in all New England from the standpoint of healthfulness and sanitation for the cantonment that will hold the 76th division of our new National Army. Railway men are agreed that although the camp may not be in the geographical center of the district from which the men at the camp have been drawn, it is at the center of population of New England and at the most strategic point of its network of railway lines.



The Crowd that Gave Boston's First 40 Per Cent Its Send Off from North Station

The movement of troops to Camp Devens and the work of transporting material and supplies to that camp have been peculiar in that the Boston & Maine, on the line of which the camp is situated, has had to construct practically no new facilities or to get together any considerable force of men to handle the camp's freight and passenger traffic. Camp Devens is at Ayer, Mass., on the main line of the Fitchburg division of the Boston & Maine, 35 miles out of Boston and at the junction of the Worcester, Nashua & Portland division at a point 28 miles north of Worcester and not quite 20 miles south of Nashua, N. H. Ayer has always been an important junction point for both passengers and freight so that when the army officers chose that town for the site of the cantonment they found a comparatively large passenger station, a 2,500-car freight yard, a strategically located wye at the station and the junction of the two divisions, engine houses and attendant railroad facilities. The railroad has had to enlarge its freight yard to a capacity of 3,500 cars, to construct a certain amount of additional trackage to serve the ten government storehouses and to meet the contractors' requirements, and also to make some additions to its passenger station and construct two new interlocking plants, but that has been about all. There has had to be no substantial increase in either the forces at the passenger station or in the freight yard, although this does not necessarily mean that the present force has not had to do much hustling to keep up with the demands made upon it.

The site for Camp Devens covers an area of about 10,000 acres. It lies immediately south of the main line of the Fitchburg division and west of the W. N. & P. division. These two lines cross at right angles directly at Ayer station about one-half mile east of the camp and the freight yard is adjacent to the W. N. & P. division directly south of the station and east of the camp. Railroad operation at some of the other cantonments has been hindered rather than helped by the necessity for using a wye to turn engines and trains. At Ayer, as will be shown below, the wye is the facility that has helped railroad operation almost more than any other one thing.

The men from Camp Devens have been assembled from the New England states and from northern New York state about as follows: Maine, 1,550; New Hampshire,

1,020; Massachusetts, 17,500; Connecticut, 9,330; Rhode Island, 1,530; New York, 5,100. The rapid progress made by the contractors at Camp Devens enabled that cantonment to be one of the few in the whole 16 to receive its quotas of 5, 40 and 40 per cent respectively on schedule time. The railroads in figuring out their schedules for handling these contingents arranged it so that the two movements of 40 per cent would each be spread over five days and this schedule was lived up to exactly. In the first movement of 40 per cent, the various states contributed their men on the following basis: On the first day, September 19, there were received at the cantonment the men from Maine, New Hampshire, Vermont and Rhode Island; on the second day, those from Connecticut; the third day, those from eastern Massachusetts, excluding Boston; on the fourth day, those from northern New York, and on the last day those from western Massachusetts and from Boston.

The illustration shows the crowd which gave the selected men from Boston their send-off from North Station. As it happened, the fifth day when the men from the Boston district left their homes was a Sunday, a great number of people from the Metropolitan district of Boston came to the railroad terminal to give the men a last good-bye with the result that a congestion resulted in the station and in the streets outside such as had not been seen in either the city or the station for many a day. In fact, so great was the congestion that men from a number of the local boards could not get to their trains at all. The trains went out without them, and they followed on a special made up for their special benefit later in the day. This condition was entirely corrected in the movement of the second 40 per cent, the Boston men moving on a Friday instead of on a Sunday. Boston called out one of the largest details of police it had called out for a long time and admittance to the station platform without a ticket would almost have required a permit from the mayor.

When the second movement began on October 3, the railroads carried as before the men from Maine, New Hampshire, Vermont and Rhode Island on the first day, those from Connecticut on the second day and those from Boston and eastern Massachusetts on the third day. On the fourth day, the second contingent of men from New York arrived, and on the last day, Sunday, October 7, the entire troop movement was completed with the arrival of the men from western Massachusetts.

It has been noted that the Boston & Maine was exceedingly fortunate in having all the necessary facilities already on hand. This preparedness, unintentional as it was, has had a more than compensating effect on the ease of operation which has characterized the railroads' work in connection with the movement of troops to Camp Devens.

As was the case at other cantonments, the policy was followed of running cars on regular trains when there were not sufficient cars from a particular region to make up a fair-sized train. In a case where such cars were handled, they were very often brought through over the Fitchburg division in regular trains, and the men left the cars at Ayer station and marched over to their new barracks. New England is so thickly populated, however, that most of the men came through on special trains. As showing how prepared the Boston & Maine was to handle these trains, it is worth while observing how they were received on a typical day. October 4 was the day on which the camp received its second quota of 40 per cent from Connecticut. These trains came through with from 10 to 13 cars and from 350 to 850 men over the New Haven to Worcester. At Worcester they were taken by a Boston & Maine engine and crew and then covered the ground between Worcester and the camp in about 50 minutes. They unloaded their men on one of the tracks on the main line directly at the crossing of one of the roads leading into the camp itself. The train was then run to Ayer station one mile beyond, around the wye, headed out again and the movement back to Worcester completed without uncoupling a car or turning an engine. In all cases so quickly was this movement handled that the cars were on the Boston & Maine's line from the time they left Worcester until they returned, not more than 2 or 2½ hours. The entire movement of about 4,400 men required seven trains, all of which arrived at Camp Devens between 1:45 and 6:30 p. m. Not a single train was late, and in most cases the trains arrived from one minute to one-half hour ahead of their schedules.

On another day, the Sunday the troops were carried from Boston and western Massachusetts, 11 trains brought in 7,000 men. On the same day, the yard at Ayer handled 1,800 cars in interchange between divisions, and yet with all this traffic only two extra men were required at the freight and passenger stations, one a flagman and one a switchman. Practically every train came through on time, although the schedule for the specials out of Boston was as good as that of the regular trains which run through without a stop. And what was most important, there was not a minute's delay caused to a freight or passenger train.

Trains from points on the New Haven and Boston & Albany were delivered at Worcester, or Concord Junction. Those from Boston were handled similarly to those from Worcester as mentioned above, that is, they unloaded their men at a siding on the Fitchburg division directly beside the camp, about one mile west of Ayer station, then they were backed around the wye, and, if desired, could be headed out towards Boston, where the cars were cleaned and otherwise disposed of.

One of the most interesting features of the entire job of carrying the selected men was the car supply. Many of the men traveling from points on the Boston & Maine came through in solid vestibule trains, while of those from points on the New Haven were furnished with electrically lighted passenger cars considerably better than is supplied on many of the road's suburban runs. The drafted men in most cases respected this kind of treatment. The condition of the cars was checked up by army and railroad officers directly on its arrival, but there were very few cases where they were at all damaged. This does not mean, of course, that the cars were as clean as they might have been at the end of a normal run. But the car cleaners did not find it hard to sweep out even an enormous pile of magazines, newspapers and empty or partly filled lunch boxes.

In few cases did the run to Camp Devens require much over three or four hours. On longer runs lunch boxes were put on the cars for the men at so-called "dining stations." Of course, as at the other camps, a few of the men took advantage of their opportunity before leaving home to get their last drink and a number of them had to be lifted or helped off the train at the camp, but in no case was there serious disorder. In fact, the train crews that were assigned to these trains were enthusiastic and very much interested in the work they were called upon to do.

The passenger movement to Camp Devens will not, of course, end with the movements of the National Army men to the cantonment. Announcement was made about a couple of weeks ago of the change in the army's plans whereby the drafted negroes will be sent to cantonments throughout the country instead of the cantonments in the southern states, and whereby three National Guard and only one National Army divisions will be formed of white men in the south instead of three divisions each as originally planned. This means among other things that the white men now in the National Army at Camps Gordon (Atlanta, Ga.), Camp Jackson (Columbia, S. C.) and Camp Pike (Little Rock, Ark.) will be taken as far as necessary to fill up the 30th (Camp Sevier, S. C.), 31st (Camp Wheeler, Ga.) and 39th (Camp Beaureguard, La.) National Guard divisions, and that the surplus will be sent to the Southern's single National Army division to be formed at Camp Jackson, Columbia, S. C.

Camp Pike will then be filled with surplus men from cantonments in the west and the men at Camp Gordon will be replaced with surplus men from Camps Devens, Upton, Dix, Meade and Lee, all in the east. Camp Devens will be called upon to supply about 8,000 men from its present number, and before long steps will have to be taken by the railroads to provide for their transportation.

But what is more important from the railroads' point of view at the present moment is the fact that Camp Devens has apparently become a Mecca for all New England. One would believe that half the soldiers at the camp had visitors on Sundays, and that those having no visitors took the trip into Boston or to other adjacent towns to see their relatives instead. The road is establishing a special service to Lawrence, Lowell and Worcester and has added a number of express trains between Ayer and Boston. There has been some difficulty in handling this special service because on one or two occasions the army officers have not cooperated sufficiently with the railroad officers as to advising them as to how many men would be on leave. But even that is remedied now.

Freight Service

The advantage of having a classification yard at Camp Devens has in one respect been a disadvantage. At other camps the trains of government or contractors' supplies reach the camp in solid train loads, but at Ayer they come through mixed in with other cars and have to be classified. For a period of two months the road was handling in this way from 35 to 80 cars a day. These cars were classified and handed over to the contractor, or the government, and it is on record that the detention of cars at the camp has seldom been over two days; and the greater part of the cars have been unloaded in a matter of about three hours. Up to September 1, the contractor at the camp had finished 622 barracks and 124 other buildings. For this purpose the railroad had handled 30,000,000 feet of lumber, 20 miles of water pipe, 2 miles of sewer pipe, 60 miles of heating pipe from 12 in. diameter down, a tremendous amount of contractor's equipment, and food and incidental supplies for the workmen. The maximum number of men employed by the contractor on any one day was 9,176, on August 22; and the average number was over 5,000. To feed these employees, the contractor's commissary had to receive supplies enough for an average of 17,100 meals daily. From June 26 to September 1 the contractor alone unloaded 3,000 carloads of freight, an average of 50 cars a day. On one day he unloaded 125 cars. The movement of freight to the camp, of course, still continues, but not quite to the same extent as when the cantonment buildings were under construction.

England's Smallest Passenger Railway.—According to the Nottingham Guardian, the smallest passenger-carrying railway in England is to be found on the estate of S. P. Derbyshire, at Ilkeston. The gage of the roadbed is only 7 in. The engine, a perfect model of the Midland Railway 1,000 class, is ¾ h. p. and will haul four adult passengers on its miniature bogie truck.

Nigeria's Railway Revenue.—A publication called "West Africa" states that despite the war Nigeria provided for ordinary needs and spent nearly £1,750,000 ($8,575,000) on railways during 1916, besides £250,000 ($1,225,000) on war, thereby incurring a deficit of £124,000 ($607,600) up to December 31. This, however, was all cleared off by the end of February this year.

Constantinople Terminal Destroyed by Fire.—The Swiss Insurance Company "Helvetia" has received a telegram from Constantinople saying that the new railway station and two immense warehouses have been totally destroyed by fire, the damage done being estimated at over four million francs (£160,000 or $784,000). The station was built by the Germans as the terminus of the Bagdad Railway.

INSTRUCTIONS FOR APPLYING WAR TAX

The Association of American Railway Accounting Officers, through a sub-committee headed by A. H. Plant, comptroller of the Southern, has issued a circular giving tentative instructions as to the application of the new war tax to the transportation of property and persons.

An informal conference was held by the subcommittee and others with representatives of the internal revenue commissioner. tentative instructions, as drawn by an accounting officer of one of the lines, being used as a base for the conference. The representatives of the internal revenue department stated that the conclusions reached by them with respect to doubtful questions were tentative and that such tentative conclusions would be subject to formal approval by the Secretary of the Treasury but that, while the conclusions reached might not be final in all respects, they could be used, in the absence of further rulings or decisions, as a working basis.

Should individual or specific transactions arise, not covered in the conclusions, accounting or other officers interested should apply to the internal revenue commissioner, Washington, D. C., for rulings.

If the corporate committee of the association so elects, the chairman will arrange, through the secretary of the association, to reissue and distribute to the members of the association all treasury decisions which may be issued in response to queries made.

The tentative instructions, referred to, are in part as follows:

(1) Section 500 of the law provides that transportation companies shall levy, assess, collect and pay to the United States government, certain taxes for the use of facilities rendered by public utilities.

(2) The taxes imposed under section 500 become effective on November 1, 1917.

(3) Section 501 provides that:—"The taxes imposed by section five hundred shall be paid by the person, corporation, partnership, or association paying for the services or facilities rendered."

(4) The taxes imposed under section 500 of the law in which officers, agents, and conductors of these companies are directly and immediately interested, and which these instructions are intended to cover are:

(a) A tax of 3 per cent of amounts paid for the transportation of property by freight. (See paragraph 5.)

(b) A tax of 1 cent for each 20 cents or fraction thereof, paid for transportation of parcels by express.

(c) A tax of 8 per cent of the amount paid for the transportation of persons (see paragraph 7); and a tax of 10 per cent of the amount paid for seats, berths and staterooms in parlor cars, sleeping cars or on vessels.

(d) A tax of 5 cents upon each telegraph, telephone or radio, despatch, message or conversation for which a charge of 15 cents or more is made.

(e) A stamp tax on each passage ticket sold on or after December 1, 1917, by any vessel to a port or place not in the United States, Canada or Mexico.

(5) The tax of 3 per cent imposed under section 500 applies on amounts paid for the transportation of property by freight either rail or water or both, or by any form of mechanical motor power when in competition with carriers by rail or water, consigned from one point in the United States to another. It also applies on amounts paid for the transportation of milk and cream. (See Schedule A.)

(6) The tax of 1 cent for each 20 cents or fraction thereof paid for the transportation of parcels by express from one point in the United States to another, applies to excess baggage, bicycles, baby-carriages, dogs, etc., transported on passenger trains as well as to express.

(7) The tax of 8 per cent imposed by section 500 applies on amounts paid (in excess of prescribed minima) for the transportation of persons by rail or water, or both, or by any form of mechanical motor power on a regular established line when in competition with carriers by rail or water, from one point in the United States to another

point in the United States, or to any point in Canada or Mexico.

(8) Taxes imposed under section 500 must be paid in cash, or by check if the collecting officer, agent or conductor be authorized by the treasurer to accept checks in payment for transportation. Those imposed under paragraph 10 of Schedule A—Stamp Taxes, must be paid for in adhesive internal revenue stamps.

(9) The responsibility for levying, assessing, and collecting the taxes imposed under the act rests upon the officers, agents, conductors, or other employes of these companies whose duties are to collect revenues for the transportation of property or persons. It will also be the duty of such officers, agents, conductors, and other persons who collect such taxes to record and to make reports and returns of and for such collections to the appropriate accounting officer of their respective companies in the manner hereinafter described or which may hereafter be required.

All such taxes so collected must be remitted with other company funds as required by the rules and regulations of the respective treasury officials of those companies having jurisdiction. Separate remittance or deposit reports or tickets for taxes deposited or remitted by officers or agents of these companies will not be required.

(10) The law specifically provides, in respect to transportation, that the tax shall be imposed upon amounts paid for the transportation of property by freight and for the transportation of persons.

The base of the taxes imposed under section 500 of the act are specified per cents (except in the case of telegraph and telephone tolls, and amounts paid for "parcels by express" as defined in Schedule B), of the amounts paid, above certain minima, for services rendered by public utilities; therefore intermediate or terminal costs for services rendered by public utilities, or others, such as costs for bedding, feeding or watering stock, reicing, etc., unless such costs are made a part of and are included in the rate charged for transportation, will not be subject to the tax.

(11) The law is specific as to what payments are taxable. It requires that all taxable collections shall be so recorded as to show whether the tax has or has not been collected when and as such amounts are paid.

It may be assumed the accounts, records and transactions of officers, agents and conductors of these companies will be examined and checked from time to time by representatives of the internal revenue department; you are therefore advised that such records and accounts must be so kept as to enable such examinations to be made; examinations shall be permitted when requested by properly accredited representatives of the internal revenue department.

Section 1004 of the law provides a penalty of not more than $1,000 for failure to collect, or to truly account for and pay over such taxes.

(12) Section 502 of the act stipulates that the tax shall not be imposed upon any payment received for service rendered the United States, or any state, territory or the District of Columbia.

(13) Transportation costs for private property of officers and agents of the federal and of state governments, when such costs are not borne by such governments, will not be exempt from the tax.

(14) Transportation costs for transportation furnished officers and men for or on account of the British, Canadian or other recruiting missions of foreign governments will not be exempt from the tax, although such transportation be furnished on transportation request forms of the United States government.

The tax applying on amounts paid for such transportation will be billed against and collected from such governments when and as transportation charges are collected; therefore agents shall not demand payment of the tax when transportation is furnished on such orders.

SCHEDULE A—TRANSPORTATOIN OF PROPERTY BY FREIGHT

(15) The measure of this tax is three (3) per cent of the amount paid for the transportation of property by freight, by rail or water, or by any form of mechanical motor power when in competition with carriers by rail or water, consigned from one point in the United States to another.

(16) The tax of 3 per cent on amounts paid for the transportation of property by freight will accrue and must be levied, assessed and collected when and as freight revenues are collected, except that the tax may and should be computed at the time freight (expense) bills and prepaid shipping tickets or bills of lading are made; the amount of the tax must be shown on the face of each such bill, prepaid ticket, or lading.

(17) The tax must be assessed and collected on "collect" shipments by agents at destinations and on "prepaid" shipments by agents at points of origin; in other words, it must be levied, assessed and collected when and as collections are made from consignees, shippers, their agents or representatives. It must not be assessed or collected by junction agents on freight revenues on freights interchanged with connecting carriers.

(18) This tax of 3 per cent of amounts paid for the transportation of property by freight will apply on all such services wholly rendered after midnight of October 31, 1917, and on all "collect" consignments which start on the journey before November 1, 1917, but which do not reach destinations until after midnight October 31, 1917.

(19) There will be many parcels of property in transit as of midnight October 31, 1917, and agents of these companies must give careful consideration to such, to the end that errors and confusions may be avoided in complying with the law.

(20) The tax will not apply on:—

(a) Freight for which the entire transit service was performed prior to November 1, 1917, regardless of when the transportation costs be paid.
(b) Prepaid consignments received for which bill of lading is issued prior to midnight October 31, 1917.

(21) The tax will apply on all "collect" shipments which reach destinations on or after November 1, 1917.

(22) As to switching and other taxable freight services rendered:

(a) If switching service be performed before midnight October 31, 1917, and the service be paid for on or after November 1, 1917, the tax will not apply.
(b) If the service be paid for prior to November 1, 1917, and the service be not rendered until on or after November 1, 1917, the tax will apply and must be collected.
(c) If unused switching tickets on which collections have been made but for which no service has been performed as of midnight October 31, 1917, be in hands of purchasers, agents shall promptly notify holders thereof that the amounts paid for them will be subject to the tax, and the tax due thereon must be collected and reported.

(23) Agents must promptly on the morning of November 1, or sooner if practicable, carefully examine all freight bills and prepaid shipping tickets on hand and make such notations on them as will enable a quick and correct application of the tax thereto.

(24) If under credit arrangements two or more bills be due by one person, firm, or corporation such bills must be listed, on collection statements and the tax must be applied to each individual consignment shown on such statement. Such statements may include both "collect" and "prepaid" items; but freight and passenger items shall not be included in the same statement.

(25) Statements referred to in the preceding paragraph (24) must be carefully recorded on the station records in such manner as may be prescribed and they shall be preserved.

(26) If credit accounts, either freight or passenger, be relief remitted to, and collections be made through the audit office, agents making such relief remittances need not, except in specific cases which may be otherwise provided for,

assess the tax thereon; such assessments must be made in the audit office and collections shall be made through that channel.

(27) Company Material: The tax will not apply on these companies' proportion of transportation charges on company materials and supplies or on any commodity which is necessary for the use of these companies in the conduct of their business as such and is intended to be so used or has been so used.

Junction agents of these companies in paying foreign lines for transportation charges on company material, shall not pay the tax thereon to such foreign lines, as such tax will be assessed and paid by the company in relieving destination agents of such charges.

(28) Western Union Telegraph Company Material: Property transported as "free" under the Western Union Telegraph contract will not be subject to the tax.

(29) Property transported by the Southern Express Company free under contract: Packages transported as "free" under the contracts between Southern Express Company and these companies, will not be subject to the tax.

(30) The tax of 3 per cent applies on amounts paid for the transportation of property by freight "when consigned from one point in the United States to another."

It does not apply on shipments consigned to points in Canada or Mexico, neither does it apply to shipments consigned to foreign ports or places. If, however, a shipment intended for export be consigned to a port agent and it move to the port on a port lading, the transportation costs on it will be subject to the tax.

(31) Miscellaneous Services—Property:

The tax will not apply on miscellaneous services rendered when the charge therefor forms a part of and is included in the through rate charged for the road haul: such as

Switching and drayage, refrigeration, not on car service, demurrage, etc.

If, however, a charge be made for switching or drayage, wharfage, towage and lighterage, in addition to the through rate, the tax will apply on amounts paid therefor.

(32) Switching: Amounts paid for switching cars locally, that is, from one yard to another or from one industry to another, will be subject to the tax of 3 per cent, provided such amounts be not included in the through rate of a transportation charge made for a road haul.

(33) Switching Absorber: Amounts paid by one carrier to another for switching service rendered in effecting competitive deliveries will not be subject to the tax provided the amount charged for such switching be included in the rate charged for the road haul.

(34) Reconsigned Freight: If a shipment consigned for delivery at one destination be ordered shipped to another destination with "charges to follow" tax must not be assessed or collected by the agent at the first or original destination. The agent at final destination must levy, assess and collect tax upon the total revenue, original starting point to final destination.

Transit Privileges—(35) It has been tentatively held, subject to the approval of the Secretary of the Treasury, that the measure of tax on amounts paid for transporting property stopped en route for in transit privileges shall be 3 per cent of the amount paid for the transportation of the finished product, starting point of the raw material to final destination of the milled or finished product, and that such tax shall be paid as and when such transportation charges are paid, provided, however, that amounts paid for transportation costs on such raw products points of origin to milling, dressing, cleaning, or refining points which may not be shipped from such intermediate points, shall be subject to the tax.

The application of the tax to in transit transactions presents intricate and complicated problems which will require close and careful consideration by agents at points where the in transit privileges are granted, and also by the freight claim officers whose duty it is to adjust transportation costs on such shipments.

Milk and Cream—(47) It has been held that amounts paid for milk and cream transported on passenger trains will be subject to the tax, and that the tax rate on amounts paid therefor, shall be 3 per cent of the amount paid.

Milk tickets sold prior to November 1, 1917, and not used before that date, will be subject to the tax, and the tax must be collected thereon from the persons to whom the tickets were sold, before such tickets can be used for transportation.

Schedule B—Express

(48) Tax on Amounts Paid on Express Matter: The act provides that the tax rate on express revenues shall be 1 cent for each 20 cents, or fraction thereof, paid for the transportation of any package, parcel or shipment by express from one point in the United States to another.

Agents and employees of these companies who also act for express companies must obtain instructions from the appropriate officer of such companies as to the collection of the tax on shipments by express.

Excess Baggage—(49) It has been held that amounts paid for excess baggage will be subject to the tax. The rate to be charged therefor will be the rate applied to amounts paid for shipments made by express,—that is 1 cent for each 20 cents or fraction thereof, paid for the transportation of excess baggage. That is to say if 20 cents or less be collected for excess baggage, the tax will be 1 cent, which must be collected; if the amount paid for excess baggage be more than 20 cents but less than 41 cents, the tax will be 2 cents, which must be collected, and so on.

Agents in selling excess baggage books must collect the full amount of tax on the amount paid therefor.

Schedule C—Transportation of Persons and Seats, Berths, and Staterooms

(50) The measure of this tax is 8 per cent of the amount paid for transportation furnished persons.

(51) It applies on amounts paid for all forms of transportation of persons sold and on all cash fares collected on and after November 1, 1917, for journeys originating in the United States destined to points in the United States, Canada or Mexico; except that: amounts paid for tickets or cash fares for continuous journeys costing 35 cents or less, and amounts paid for commutation or season tickets for trips less than 30 miles will not be subject to the tax.

(52) The tax must be levied, assessed, and collected by the officer, agent, conductor or other representative of these companies, who sells the ticket or collects the fare; it must be collected at the time collection is made for a ticket sold and at the time a cash fare is paid.

(53) In selling mileage, commutation and season books or tickets, assess and collect the tax on the total cost of the book or ticket sold.

(54) If a lump sum be paid for a train or a car for the purpose of transporting persons, the tax of 8 per cent shall be levied and collected on the gross amount paid for such train or car.

(55) If the charge for a chartered or special train for the purpose of transporting persons be a per capita rate and if the rate be 36 cents or more, the tax must be assessed and collected on each ticket sold or cash fare collected. If the charge be on a per capita basis with a guaranteed minimum, and the per capita collections be less than the minimum, the tax shall be assessed and collected on the minimum.

(56) Section 500 of the act takes effect November 1, 1917; there will be many persons in transit on tickets sold

prior to that date. The law makes the following provision for such cases:

"If a ticket (other than a mileage book) is bought and partially used before this section goes into effect [November 1, 1917], it shall not be taxed, but if it be bought but not used before this Section takes effect, it shall not be valid for passage until the tax has been paid and such payment evidenced on the ticket in such manner as the commissioner of internal revenue may, by regulation, prescribe."

(57) Under the provision recited in paragraph 56 preceding, conductors will demand the payment of taxes on any ticket (mileage books excepted), dated prior to November 1, 1917, which may be presented for passage after that date, unless such ticket and the conditions under which it is presented show conclusively that the ticket has been previously used for any part of the journey.

(62) Amounts paid for staterooms on vessels: If in selling a ticket for a journey, a part of which is by water, and the amount collected includes the cost of a stateroom, a tax of ten (10) per cent of the cost of the stateroom must be collected in addition to the tax of 8 per cent on the total transportation cost collected. Illustration:—If the transportation cost be $40 and the cost of the stateroom be $5 the tax will be 8 per cent on $40 and 10 per cent on $5, a total of $3.70.

(63) Amounts paid for sleeper and parlor car or berths: If the ticket rate for a journey includes the cost of sleeping or parlor accommodation a tax of ten (10) per cent on the cost of such accommodation must be collected in addition to the 8 per cent tax on the transportation cost.

Agents and conductors of these companies must apply and collect the tax on all parlor car seats sold or collected by them in parlor or other cars belonging to or operated by these companies for which a charge is made; the tax upon the receipts from the sale of such accommodations must be accounted for to the appropriate accounting officer of the company to which the parlor car tickets are reported in such manner as he may prescribe.

Agents of these companies who sell Pullman accommodations must be guided by instructions issued by the Pullman Company in the collection and reporting of taxes on such accommodations sold by them.

(64) If a mileage book or any other form of ticket be issued in payment for advertising in lieu for cash, the selling value of such book or ticket will be subject to the tax.

Passage Tickets. (68) Paragraph 10 of Schedule A—Stamp Taxes imposes a tax upon the steamer's proportion of each one way and round trip passage ticket, for each passenger sold or issued in the United States for passage by any vessel to a port or place not in the United States, Canada, or Mexico, provided the cost of such ticket be more than $10. The taxes on this class of ticket must be paid in adhesive internal revenue stamps to be furnished or paid for by purchasers. Such stamps must be affixed to contract portion of ticket; after being so affixed they must be cancelled by the person using or affixing them, writing or stamping thereon the initials of his or her name, and the date of application.

Schedule D—Telegraph and Telephone

(69) The tax payable on this class of service is: 5 cents upon each telegraph, telephone, or radio, dispatch, message, or conversation, which originates within the United States; for the transmission of which a charge of 15 cents or more is made for the entire service performed.

South Wales Railway Men and the Eight Hour Day.—South Wales railwaymen have decided that the time is not opportune to proceed with a demand for an eight hour day. They are convinced that, ultimately, they will gain more by honorably observing agreements.

NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS

The twenty-ninth annual convention of the National Association of Railway Commissioners held at Washington last week completed its four-day session on Friday, October 19, after deciding to hold its next year's convention at Washington on November 12. Officers were elected as follows: President, Edward C. Niles, of New Hampshire; first vice-president, Charles E. Elmquist, of Minnesota; second vice-president, C. M. Candler, of Georgia; secretary, James B. Walker, of the New York first district commission, New York City; assistant secretary, L. S. Boyd, librarian of the Interstate Commerce Commission.

Special War Committee

Responding to a suggestion made by President Thelen in his opening address, a resolution was adopted providing for the appointment by the president of a special war committee of five members, which "shall be charged with the duty of conferring with the appropriate federal and state authorities and with each state commission and of giving advice and suggestions as to what each commission can do affirmatively and constructively to help the Nation in the present emergency; and to select agents to carry out its objects and to make effective the offers of co-operation made by the president and the executive committee." One of the reasons given for the appointment of such a committee was that the state commissions might be enabled to learn of the desires and needs of the government direct instead of from the railroads. The following were appointed members of the committee: Max Thelen, of California, chairman; F. H. Funk, of Illinois; T. H. Whitney, of New York; J. B. Eastman, of Massachusetts; R. W. E. Donges, of New Jersey, and President Niles, ex officio.

The association held a dinner at the New Willard Hotel on October 17 at which the speakers were Herbert C. Hoover, United States food administrator; Samuel Rea, president of the Pennsylvania; Max Thelen, president of the association; Clyde B. Aitchison, of the Interstate Commerce Commission, and Senator Francis G. Newlands of Nevada, chairman of the Joint Committee on Interstate Commerce. Mr. Rea's address was published last week. Mr. Hoover complimented the roads on their service to the Nation. Senator Newlands declared that the successful prosecution of the war depends upon transportation more than upon anything else and that the government would either have to give the railroads permission to increase rates or lend them money.

A proposal was adopted that the name of the association be changed to National Association of Railway and Utilities Commissioners, because only a minority of the commissions represented in the membership are purely railroad commissions.

Reports of Committees

In addition to the reports of committees referred to in last week's issue, the Committee on State and Federal Legislation, J. L. Bristow of Kansas, chairman, outlined the part taken by the committee in connection with the inquiry by the Newlands congressional committee. The committee stated that Mr. Thelen's testimony before the Newlands committee "showed that the main effort of the railroad executives was a concerted drive against the authority of the states for the purpose of depriving them not only of such powers as they now have over roads engaged in interstate commerce, by reason of the failure of the federal government to enter certain fields of regulatory activity, but also to deprive them of the right to regulate and supervise the purely state rates, service, facilities, equipment and safety of operation of all railroads which in any way engage in interstate commerce." It was stated also that Mr. Thelen had demonstrated that "the cause of the impaired credit of the railroads was not public regu-

lation, either state or federal, but could be found in unsound financial structures, unwise railroad construction and inefficient and at times criminal mismanagement of railroad finances."

The committee has an understanding that at the appropriate time all representatives of the state commissions who desired to be heard by the Newlands committee will be given full opportunity to present their views. In anticipation of this hearing, the committee prepared and submitted to a number of the older commissioners a questionnaire, the return of which affords much valuable information as to the jurisdiction exercised by the states and state commissions in regulation of interstate carriers. This information is now in the hands of the committee ready for use at such time as it may be needed. It was the view of the committee that it should be vested with the same general authority which was conferred upon it at the last convention for the purpose of taking any appropriate action which may assist the congressional sub-committee in obtaining all of the information which it may need for the discharge of its duties. This recommendation was adopted by the association.

The Committee on Car Service and Demurrage, F. H. Funk, of the Illinois Commission, chairman, expressed the opinion that one of the first great problems the new Division of Car Service of the Interstate Commerce Commission will be called upon to solve is the formulation of some practical and reasonable rules covering the matter of car distribution in times of car shortage, but in view of the present abnormal conditions the committee felt that any extended discussion of car service problems under present conditions would prove of little permanent value. E. H. De Groot, Jr., addressed the meeting briefly on the work of the Division of Car Service in co-operation with the Commission on Car Service and other bodies.

The Committee on Express and Other Contract Carriers by Rail, J. P. Webster, of the Georgia Commission, chairman, discussed the question as to whether express traffic should be taken over and handled by the express companies direct, expressing the opinion that such a step would not result in as good service to the shipper and receiver of express traffic as is given under present conditions.

The Committee on Capitalization and Intercorporate Relations, A. R. Weed, of Massachusetts Board of Gas and Electric Light Commissioners, chairman, presented a general discussion of the question and recommended that the association urge the immediate adoption of legislation substantially in accordance with the provisions of the Rayburn bill, independently of the question of federal incorporation and that such legislation shall embody the right of the state commissions to sit with the Interstate Commerce Commission and to participate in its deliberations on applications relative to the issue of securities by carriers organized or operating in the respective states, but shall exclude from its scope the securities of street railways.

Valuation

The Committee on Valuation, C. E. Elmquist, of the Minnesota Commission, chairman, presented a general discussion of the progress made by the Interstate Commerce Commission in the valuation of railroad property. The committee stated that during the last year the carriers have made strenuous covert efforts, including a personal appeal to the President, to secure the discontinuance of proceedings under the valuation act, but that the committee is of the opinion that every reason which was ever urged as warranting the enactment of the law in the first place applies today with the same or greater force and that "there are additional reasons for the valuation that did not exist when Congress passed the law, such as the apparent imminence of government ownership as a live issue, the actual taking over of certain roads for war purposes, and the questions of compensation and return which will grow out of the priority of shipments act and out of the new revenue system." A suggestion was made that the valuation will proceed more rapidly, more cheaply for the government and for the carriers and with less disturbance of the ordinary affairs of the railroads and the balance of the country if the carriers "cease their attitude of regarding the government as being a hostile party in a lawsuit."

The convention voted that a new valuation solicitor should be appointed by the committee to represent the state commissions at Washington in connection with the valuation proceedings, succeeding Mr. Aitchison, who has recently been appointed a member of the Interstate Commerce Commission.

C. A. Prouty, director of the Division of Valuation of the Interstate Commerce Commission, presented a general discussion of the valuation work. He said that the causes which had required the expenditure of so much time on the first preliminary reports would not occur again because the decision of the commission on the points raised in connection with those cases would serve as a guide for future work. He explained that unit prices as of June 30, 1914, are being used so that all of the valuations will be made on a common basis. If it is necessary to change them on account of increasing prices in the future they can all be changed at one time.

Referring to the cost of the work, Mr. Prouty said that up to October 1 the government had expended about $9,500,000 and that the appropriation for this fiscal year is $3,500,000. The commission expects to ask for a similar appropriation for the next fiscal year, and he still hopes that the cost to the government will not exceed his original maximum estimate of $20,000,000. Mr. Prouty said that the cost to the government does not represent the entire cost because the public in the end also pays for the cost to the railroads. He said that the railroads have been passing around some very fantastic figures as to their costs, and he had no way of knowing what they were actually expending, but that the cost to the railroads ought not to exceed the cost to the government. He remarked, however, that the valuation expenses of the railroads include the cost of conferences at White Sulphur Springs, "where the golf course is one of the finest in the country and the cuisine cannot be surpassed." He also declared that a large part of the cost to the railroads is incurred, not for the purpose of contributing to the work, but for the purpose of attacking the work of the government, and is partly due to the fact that many of the railroads had not kept their records in the shape that a well-managed railroad should have kept them, so that the cost of compiling them now ought not fairly to be charged to the expense of the valuation. He added, however, that he had no fault to find with the co-operation being rendered by the carriers, which had been very helpful in many instances.

Director Prouty vigorously opposed the idea of discontinuing the valuation work on account of the war, saying that if the work had not been begun he would not now recommend that it be started, but that if it were discontinued in its present condition it would amount virtually to throwing away every dollar that has been expended. It took more than a year to organize the work originally and it would take that much time to begin it over again. He said the suggestion to suspend the valuation does not originate with the men who are operating the railroads, but with bankers and financiers who control the railroads and who do not want the valuation completed because it would render impossible the manipulations and speculations out of which they have made enormous fortunes. The time might come, Mr. Prouty said, when it would be necessary to discontinue the work, but so long as the ordinary activities of society are continued it would be a mistake to do so. Instead of saving money it would involve additional cost in the future and there are comparatively few men still engaged

in the work who would be likely to become engaged in the work of the war. The engineering force has already been seriously depleted, and the engineers have been encouraged to enlist and have been given leave of absence to go to training camps. Exemptions were asked for only 28 men, who were regarded as indispensable. When the war is over, there is likely to be a very great demand for transportation facilities, and the valuation will serve an important function as a basis for future financing.

While the division of valuation has taken the position that the law does not provide for the finding of an ultimate value, Mr. Prouty said that when all of the information has been collected it must all be put together in some way to determine the ultimate dollars and cents value. For example, he said, the Kansas City Southern is capitalized for about $99,000,000, and the market value of its securities was found to be about $62,000,000, the cost of reproduction new was placed at $50,000,000, and the cost of reproduction less depreciation at $40,000,000, while the original investment was found to be about $47,000,000. These are the facts ascertained by the division, and the government must eventually determine what figure represents the value. By this, he said, he meant the value for rate-making purposes.

Glen E. Plumb, counsel for the railroad brotherhoods, read a paper on the subject of "Charter Limitations as Affecting the Value of Railway Property," maintaining that the property right of the railways is limited by their charters to their use for the public service, and that any value beyond this belongs to the public.

The convention decided to provide for a standing committee on public ownership and operation.

Rates

The Committee on Rates, A. E. Helm, of the Kansas Commission, chairman, expressed the opinion that as one step toward the establishment of a scientific method of establishing railroad rates, it is highly desirable that an effort should be made to bring about a uniform percentage relation of class rates for application upon both state and interstate business. The committee also expressed the opinion that the making of increases of rates upon a percentage basis is unlawful for the reason that it necessarily creates a discrimination between localities. It recommended that this method of making increases of rates should be disapproved by all commissions and that, if necessary, the law as relating to the subject should be amended to clearly prohibit the making of such increased rates. The report was discussed by B. H. Meyer of the Interstate Commerce Commission with special reference to the question of minimum carload rates. Commissioner Meyer said that the capacity of freight cars has increased to such a great extent that some railroads probably have too many large cars to suit the requirements of the shippers and not enough cars to meet the reasonable needs of the small shippers, who are sometimes required to pay an amount for a minimum carload which represents a high rate for the quantity actually shipped. Mr. Meyer thought the percentage of utilization of space in the small cars is greater in many cases than in the larger cars.

The report brought out an interesting discussion of various rate situations involving conflicts between the jurisdiction of the federal and state commissions, particularly as to passenger fares, which led to the adoption of a resolution authorizing the Committee on State and Federal Legislation to confer and co-operate with the Interstate Commerce Commission with a view to bringing before Congress a suggestion for legislation to specifically legalize co-operation between the state and federal commissions in such cases. Rate situations involving a conflict as to passenger fares were described by R. W. E. Donges of the New Jersey Commission, and P. J. Lucey of the Illinois Commission, both of whom declared that they did not see how co-operation with the Interstate Commerce Commission would result in any agreement in their cases.

Proposed Reduction in Accounting Requirements

The Committee on Statistics and Accounts, Arthur A. Lewis, of the Washington Commission, chairman, presented a supplemental report of its conference with the statistical and accounting representatives of the Interstate Commerce Commission and of the Association of American Railway Accounting Officers on October 4, held at the request of the railroad committee to consider what elimination of and modification in reports now required from the railroads by the Interstate Commerce Commission and the commissions of the several states could properly be made in order to conserve accounting forces during the war. The committee stated that the representatives of the railroads urged the necessity for relief because there have already been put upon the railroads additional burdens, requiring large increases in their clerical forces; this additional help has been hard to obtain and the carriers have been obliged to take on inexperienced clerks. Having no occasion to doubt these allegations, the committee said, its members, together with the representatives of the Interstate Commerce Commission, have carefully considered and checked over the suggested changes in schedules embodied in the report prepared by a special committee of the railway accounting officers, with the result that they had reached the conclusion that some of the schedules proposed to be eliminated or changed should, in the opinion of the committee and the representatives of the Interstate Commerce Commission, be modified in certain particulars.

Before the consideration of the proposed curtailment of the reports was taken up, it had been made clear by the committee that it had no power to bind any of the state commissions and it was further understood that the changes recommended by the committee to be made are wholly an emergency war measure, to continue only during the war, including a short period of subsequent adjustment. It was also the committee's understanding that the proposed changes and eliminations as modified will not affect the present classification of accounts and that any data heretofore furnished which is now proposed to be eliminated, if found to be necessary and essential to any commission, will be furnished by the carrier in a special report. With this understanding the committee believes that the request for change in the schedules as modified can be accepted by the state commissions without any serious embarrassment, during the war period. This report was referred to a special committee for consideration during the convention, which presented another report making some further modifications in the proposed changes and in this form the action of the committee was approved.

The Ceylon Railway.—The Ceylon Government Railway comprises a system of 706 miles, of which only 22 miles are double track, and over a large portion of which the traffic is very heavy.

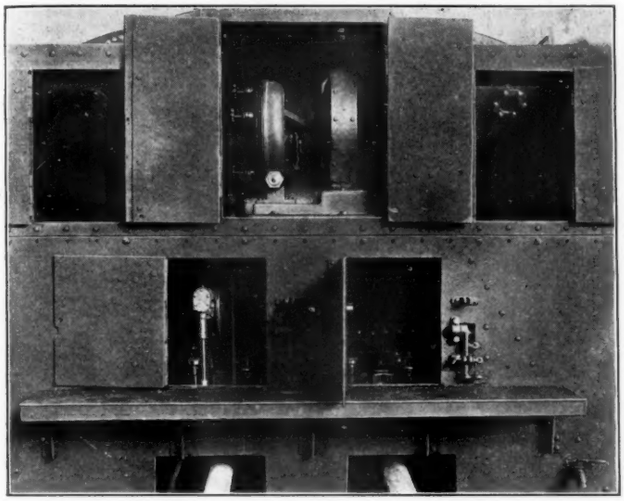
War Losses of British Union.—Up to August, 1917, there had been 2,998 members of the National Union of Railwaymen killed in action or had died from wounds.—*The Engineer, London.*

Private Owners' Car Order in England.—By an order recently passed in England, when it appears necessary to increase the supply of cars to a colliery, the Board of Trade may take possession of any private owner's cars and use them for that purpose. In such cases the owner is to be paid for the use of the car such amount as may be agreed. Failing agreement, an arbitrator appointed by the Railway and Canal Commission will fix the sum to be paid.

What Pulverized Coal Means to Brazil

By Burning Brazilian Coal This Way, "The Fuel Problems of Our Country Are Solved," Says President Braz

As much as the railroads and industries in this country are suffering from the present fuel situation, the problem is insignificant when compared with that of Brazil. With about 500,000 square miles of territory containing deposits of coal which can be easily mined and transported to the industrial centers, Brazil has been forced to import this material from Europe and America because of



View of the Front End of the Tender Showing the Distributing Machinery

the fact that up to the present time it has been found impossible to burn the domestic coal successfully. In 1915 there was imported 1,346,147 metric tons, 561,150 of which came from America. The price of this coal has more than doubled on account of the war, the average price now paid being about $40 per ton. Even at this high rate Brazil has been unable to obtain more than 75 per cent of its requirements.

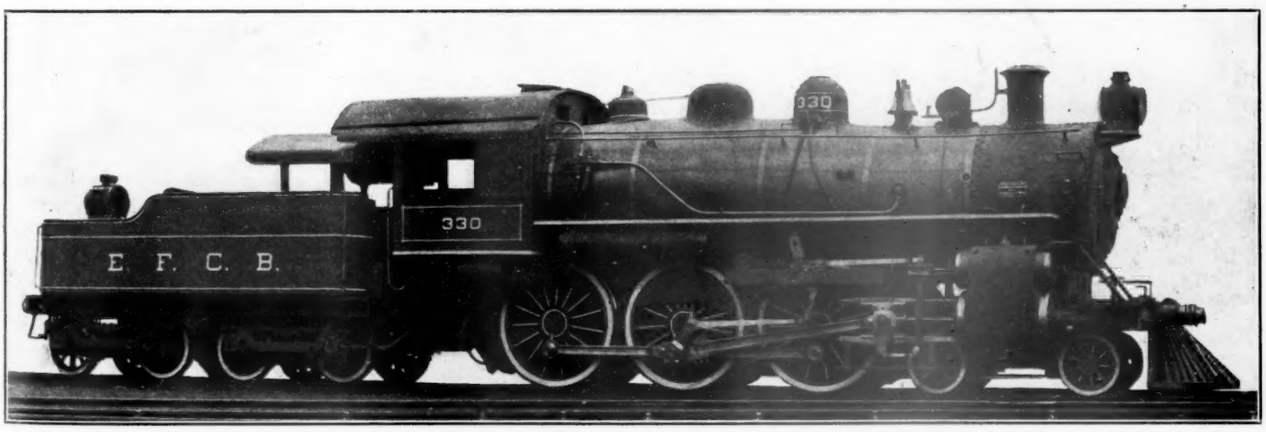
The difficulties encountered with the use of Brazilian coal are due to the large amount of sulphur and iron pyrites contained in it, which combined with the ash forms such a large amount of clinker that efficient combustion on ordinary grates is impossible. The analysis of the coal is as follows:

Moisture	from 2 to 8 per cent
Sulphur	from 3 to 9 per cent
Volatile	from 14 to 28 per cent
Fixed carbon	from 34 to 58 per cent
Ash	from 26 to 30 per cent

The relatively high volatile and carbon content make it very desirable for fuel if it can be burned successfuly.

The Brazilian fuel situation is of national importance and has a direct bearing on the political situation. Several extensive and expensive investigations have been made to find a means for successfully using this fuel, but until 1915 the problem remained unsolved. At that time an article appearing in the *Railway Age Gazette* describing tests made by the Locomotive Pulverized Fuel Company of New York, with pulverized coal on locomotives, was called to the attention of the government by the director of the Central Railway of Brazil, Dr. Miguel Arrojado Lisboa. This method of burning fuel not having previously been considered in connection with the Brazilian coal, Dr. Joaquim de Assis Ribeiro, chief of traction of the Central Railroad of Brazil, was sent to this country to make an investigation. The possibilities of this method were so apparent that 50 tons of Brazilian coal was shipped to this country for tests on the pulverized fuel burning locomotives. These tests proved so satisfactory that in May, 1916, Dr. J. J. da Silva Freire, sub-director and locomotive superintendent of the Central Railway of Brazil came to this country for further investigation, paying particular attention to the use of pulverized fuel in both locomotives and stationary boilers.

As a result of the second investigation the Central Railway of Brazil decided to install a pulverized fuel preparing plant, having a capacity of 15 tons per hour, to be used for steam locomotives and stationary boiler equipment at shops located at Barra do Pirahy, which is about 65 miles north of Rio de Janeiro. The plans and specifications for this equipment were prepared by the International Pulverized Fuel Corporation, the foreign agents of the Locomotive Pulverized Fuel Company under whose direction the Brazilian pulverized coal tests were made. At the same time an order was placed for twelve 10-wheel passenger locomotives to be equipped with that company's pulverized fuel burning



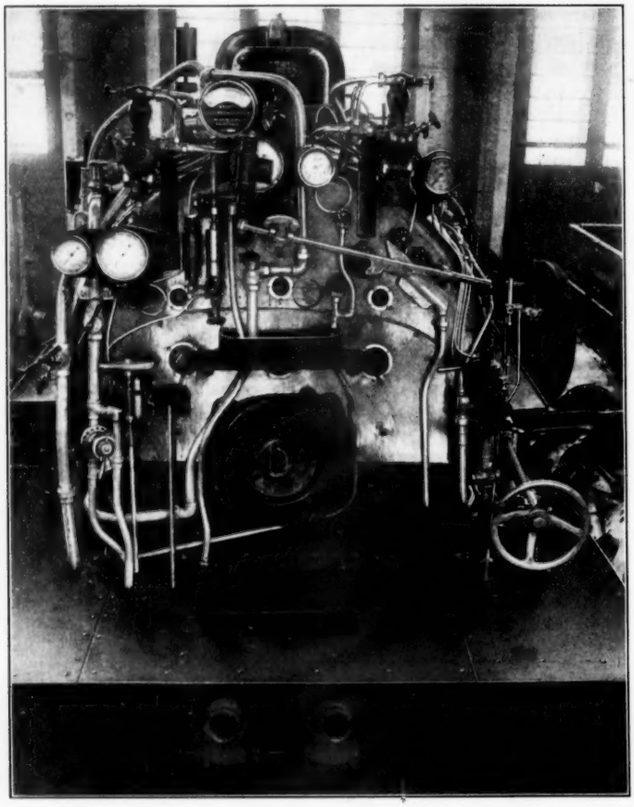
Pulverized Coal Burning Locomotive for the Central Railway of Brazil

apparatus. These locomotives were built by the American Locomotive Company.

The ground was broken for the pulverizing plant May 17, 1917, and the plant was placed in operation August 22. The first locomotive fired with pulverized fuel was put into service August 27 and the rest of the locomotives were put into commission at the rate of one a day thereafter. On September 9 the first run was made with the pulverized National coal. This run was made with considerable ceremony, the president of the republic riding the locomotive throughout the trip. A report of the trip from an observer is given below:

"The first *official* experience with our national coal pulverized was realized yesterday, September 9, on the Central Railway of Brazil, with the special train that transported Dr. Wencenslao Braz, president of the Republic of Brazil, and his staff. Locomotive 282 was attached to the president's special train at Barra do Pirahy and pulled it to Cruzeiro, a distance of 147 kilometers, or about 90 miles, the time being three hours. The trip was made with excellent results, particularly in the long stretch between Barra do Pirahy and Cruzeiro.

"During a great part of the trip the president remained

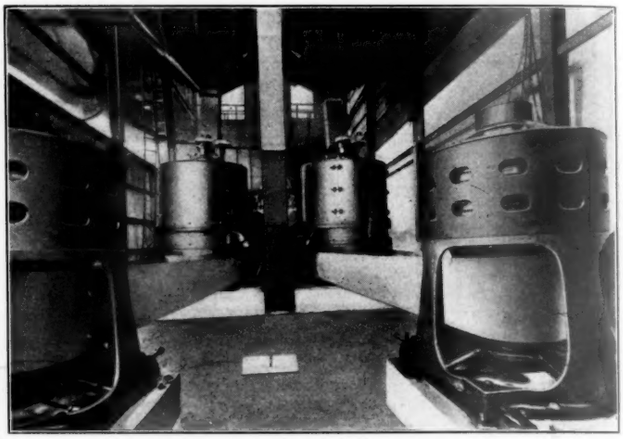


Back Head of the Pulverized Fuel Burning Locomotive with the Cab Removed

in the locomotive cab, assisting with the feeding of the firebox with the national coal pulverized in the plant recently constructed at Barra do Pirahy, the coal having come from the Sao Jeronymo mine. The president of the republic showed himself very much impressed with the calorific value of the coal and the ease and regularity with which steam pressure was maintained by the locomotive throughout the trip, and without any smoke.

"The tonnage of the train was 210, which was hauled back, the total coal used being, as well as I can estimate, about 4 tons. The running time going was three hours exactly; the return 3 hours and 25 minutes. President Braz sent a telegram to the minister of public works, as follows: 'The fuel problems of our country have been solved.' He also sent a telegram of congratulations to Dr. Assis Ribeiro. The President and the director expressed themselves as being entirely satisfied and highly pleased at the demonstration, and also as to the simplicity of the machinery and control over the fire, which was thoroughly demonstrated while they were on the locomotive.

"On leaving the locomotive cab for his car, the President embraced effusively the engineer and fireman, and congratu-



Interior of the Pulverizing Mill

lated Dr. Aguiar Mareira, director of the Central Railway of Brazil, on the results obtained."

At the conclusion of the trip the president sent the following telegram to Dr. Traveres de Lyra, minister of railways:

"From Barra do Pirahy to Vargem Alegre I traveled on 10-wheel locomotive No. 282 fitted for the use of pulverized fuel, with excellent results. The trip was made with a velocity of 65 kilometers per hour, having a train of 210 units behind it. I take great pleasure to give you this communication, which I am certain will be received by all Brazilians interested as a solution of one of our most important national problems. Salutation. Wencenslao Braz."

With the successful use of native coal, Brazil has solved one of its most perplexing economic problems. The Brazilian government has contracted to equip 250 of the locomotives on the Central of Brazil with the pulverized fuel burning equipment during the next five years. This contract also includes the equipping of stationary boilers and industrial furnaces.

The 12 locomotives which were built in this country and sent to Brazil equipped to burn powdered fuel weigh 172,000 lb. and have a maximum tractive effort of 28,300 lb. They have a gage of 5 ft. 3 in., cylinders 21½ in. by 28 in., driving wheels 68 in. and weigh 122,000 lb. on drivers. They are equipped with firebrick arches and superheaters, have a total heating surface of 2,149.7 sq. ft. and a superheater heating surface of 428.2 sq. ft.

The illustrations show a view of the locomotive, a view of the back head of the locomotive with the cab removed, the front end of the tender containing the pulverized fuel distributing machinery and interesting views of the pulverizing plant.

AN ENGLISH SERVICE RECORD.—George Hall, of Coventry, who is 70 years of age, has completed 60 years in the service of the London & North Western, and drives an engine daily.

General News Department

The Union Pacific is training a class of women at Omaha in ticket selling, as well as in telegraphy and other station agents' duties.

Two armed men bound and gagged the express messenger on a Chicago, Memphis & Gulf passenger train, near Ridgley, Tenn., on October 18, and escaped with about $12,000 in currency.

In the Federal Court at Louisville, Ky., the Louisville & Nashville has been fined $200 for violation of the law prohibiting the shipment of cattle from quarantined territory, and the same sum for violation of the safety appliance act.

The Ironton Railroad, operating a line from Hokendauqua, Pa., westward, eight miles, to Siegersville, has notified the Pennsylvania Public Service Commission that at the end of this month it proposes to suspend passenger train service, because of high wages and a scarcity of coal.

The Mexican Government has ordered 3,000,000 bushels of corn in the United States, to relieve distress in Mexico. The corn is to be sent by way of Laredo, at the rate of 200,000 bushels every 20 days. On the railroads in Mexico the freight rate is to be one half the usual tariff.

The Brooklyn Rapid Transit Company, Brooklyn, N. Y., is training ten women to act as guards on subway trains. This company employs women as ticket sellers, and those now being instructed for the train service were picked from the waiting list of applicants for indoor places.

Recent tabulation of employees of the Nashville, Chattanooga & St. Louis now in the service of Uncle Sam, and those subject to draft, shows a total of 1,642 out of approximately 10,000 on the company's payrolls. So far 193 employees have enlisted in the army or navy, while 1,449 men in the several departments of the road are subject to draft.

The New York Central reports that forged drafts of the freight claims accounting department of the road have been found at a number of places in Rochester and Buffalo. The drafts are all drawn on the treasurer of the New York Central Railroad Company through the Lincoln National Bank, New York, for $35 each, and all bear No. 79,870, dated Buffalo, October 4, 1917, to the order of James A. Oliver, 365 Glenwood avenue. No city is given.

Members of the Order of Railway Telegraphers, involved in a wage dispute with the Chicago, Rock Island & Pacific, presented testimony before an arbitration board in Chicago, last week. Among the demands of the men are: 20 per cent increase in pay, an eight-hour day, various adjustments in rules and certain vacation privileges. It is expected that the board will conclude its deliberations some time this week. The dispute is being arbitrated under the Erdman act by William C. Brown, vice-president of the Order of Railway Telegraphers, Chicago, and Owen D. Gorman, of Mauk, Ga., representing the telegraphers; C. W. Jones, general manager of the Rock Island, Des Moines, Ia., and E. S. Jouett, general attorney of the Louisville & Nashville, Louisville, Ky., representing the railroad; and Judge Stanton J. Peelle and Prof. James H. Gore, Washington, D. C., representing the Federal Government.

Record-Breaking Aeroplane Flights

Lieutenant Resnati, an aviator of the Italian army who has been making experimental flights in this country during the past month, arrived at Mineola, L. I., 20 miles east of New York City, on Monday afternoon of this week in 4 hrs. 11 min. from Hampton, Va., carrying eight men besides himself. The distance is about 320 miles, making the average rate of speed about 76 miles an hour. The machine, a triplane, with 85 ft. spread of planes, has three motors of 160 hp. each. Most of the journey was made at a height of about 9,000 ft., at which height the temperature most of the time was about 32° F. On the same day Lieut. Baldroli, also an Italian, made the same trip in a 210 hp. machine, carrying one passenger, in 2 hrs. 55 min., or at the rate of about 110 miles an hour. Passing over New York City, Lieut. Resnati rose to a height of about 12,000 ft. for the purpose of avoiding disagreeable "air pockets."

Morkrum Printing Telegraph on the Southern Pacific

The Southern Pacific has just put in operation a set of Morkrum printers between Ogden, Utah, and San Francisco, Cal. The wire is duplexed, releasing one wire. By the new apparatus 2,000 messages are sent daily, within a period of about 13 hours. This system is in use between San Francisco and Los Angeles.

More Liberty Loan Subscriptions

In addition to the fifteen roads noticed in the last two issues of the *Railway Age Gazette* as having subscribed a total of $48,750,000 for the Second Loan Liberty Bonds, the following subscriptions have been recorded in the last week:

Atlanta & West Point	$300,000
Delaware & Hudson	1,000,000
Illinois Central	1,000,000
Mobile & Ohio	420,000
Pittsburgh & West Virginia	250,000
St. Louis Southwestern	750,000
Union Pacific (additional)	5,000,000

The total to date, including these items, is $57,470,000.

Railroad Assistance for Russia

Three members of the American Railroad Commission which went to Russia early in the year to study the railway conditions of that country, with a view to extending assistance from this country, have returned to the United States with detailed recommendations in addition to the reports which have been sent by letter and by cable. Those who have returned are W. L. Darling, formerly chief engineer of the Northern Pacific; George Gibbs, consulting electrical engineer; and J. E. Greiner, formerly chief consulting engineer of the Baltimore & Ohio. They have reported a considerable improvement in the congestion at Vladivostok which has hampered the transportation of supplies over the Trans-Siberian Railway. Extensive plans for improving the condition of the road are now under way at Washington and elsewhere, under the direction of S. M. Felton, director-general of railways for the War Department. Twelve units of railway officers, consisting of division superintendents and their staffs, and including a considerable number of shop men, are being recruited to be sent to Russia. They will be under the direction of G. H. Emerson, general manager of the Great Northern.

Canadian Railways' War Board

"Canadian Railway Association for National Defence" is the name of the war board that has been formed in Canada. It will formulate a policy of railway operation to render the most efficient service to the nation. Plans include elimination of unnecessary service and co-operative use of all facilities. Lord Shaughnessy, Canadian Pacific; Howard G. Kelley, Grand Trunk; Sir William Mackenzie, Canadian Northern, and Alfred H. Smith, New York Central, constitute an executive committee. The administrative board is headed by U. E. Gillen, Grand Trunk, and the car service committee by W. A. Kingsland, Canadian Northern. The headquarters of the board will be at Montreal.

"Car Shortage" Increased

On October 1 the excess of unfilled orders from shippers for freight cars over and above the idle cars at different points numbered 70,380. This compares with a "shortage" of 77,682 on July 1; 33,776 on August 1, and 34,605 on September 1. The gross "shortage" this year was 94,572 cars, almost identical with the number (94,854) one year ago. The difference in the excess of unfilled orders over idle cars for the two years is accounted

for by the fact that in 1916 as many as 34,157 cars were idle, whereas this year only 24,192 were reported as idle, thus indicating a more efficient use of the available equipment on the part of the railroads.

The War Board on October 10 had been in existence exactly six months and the returns just at hand show that during that period the railroads of the country have rendered upwards of 15 per cent more service than they did during the same period last year with practically the same plant.

Send Christmas Packages Early

The campaign for early shipment of Christmas packages, already started in a number of places, is being pushed jointly by the American Railway Association's car service committees of Chicago, Milwaukee, Wis., and South Bend, Ind. Co-operation is promised by representatives of the National Industrial Traffic League and the Chicago Association of Commerce. Each railroad is to do everything possible to promote early shipments, whether by mail or express. Among prospective recipients are approximately a million soldiers in the various cantonments and training camps. The postoffice department has fixed November 15 as the last day for mailing Christmas packages to our soldiers and sailors abroad. There is already a shortage of baggage car equipment that affects the handling of mails. Unless the public takes into consideration the shortage of equipment and of labor that the railway mail service will be confronted with during the holiday period, serious congestion and consequent delays to Christmas mails will result.

Avoid Killing Live Stock!

The Commission on Car Service of the American Railway Association, adopting the appeal for saving animals which has been issued by certain western roads, has issued a circular of appropriate suggestions, designed to conserve the live stock of the nation. The circular is addressed to owners of live stock, town officers, newspaper editors and railroad employees. It says, in part:

"Do you know that thousands of horses, mules, cattle, hogs and sheep are killed annually by railway trains in this country, and that this economic waste, many millions of dollars, can be reduced? The thousands of horses and mules that are killed every year would fill the artillery requirements of many regiments, and the thousands of cattle, hogs and sheep that are killed every year would provide meat for thousands of soldiers. Owners of stock should keep their animals in fenced enclosures. Town officers should pass ordinances prohibiting the practice of permitting stock to roam at large. Superintendents, roadmasters and section men should make a personal appeal to owners to keep their animals in fenced enclosures. Section men should drive stock off right-of-way, and keep farm gates closed, and fences and cattle guards in good repair. . . ."

Food Administration Gives Relief for Cattle

The State Railroad Commission of Texas has thanked the United States Food Administration for its assistance in moving some 1,500 cars of live stock from drought stricken sections of that state to other locations where pasturage and water could be obtained. An appeal was issued stating that a portion of Texas was undergoing the most severe drought in the history of the state for many years, and that cattle were dying by the hundreds for lack of food and water. Within 48 hours from the time the appeal reached the Food Administration at Washington stock cars were moving westward to the stricken districts. The worst conditions prevailed along the lines of the Texas & Pacific, and the Kansas City, Mexico & Orient, and these lines were unable to obtain anywhere in the West a sufficient number of cars to get the cattle out of the country. Edward Chambers, head, and F. S. Brooks, assistant head of the transportation division of the Food Administration immediately took charge of the situation and obtained cars in the Eastern section of the country and sent them to Texas. The Pennsylvania, the Wabash, the Burlington, and the Missouri Pacific furnished the first quota of 875 cars, the major portion from the Pennsylvania. A second consignment was required, of which the Chicago & North Western furnished 300 cars, the Chicago, Milwaukee & St. Paul 100, and the El Paso & Southwestern 150. The work of the Food Administration received hearty co-operation from the Commission on Car Service.

New Haven Employees in the Army and Navy

The New York, New Haven & Hartford reports that 893 of its employees have volunteered since war was declared; besides these the records now show that in the operating department alone 537 men have been certified for service in the National Army and 429 drafted. The company's records show that there are 9,073 men in the operating department subject to the selective army. Of this number 4,134 are married and 1,321 are single with dependents. There are 3,435 men in this department between the ages of 21 and 31 who are single and who claim no dependents. Of this latter number there are about 900 in the train service for whom the road would feel justified in claiming exemption for industrial reasons.

There have already been 3 conductors, 4 engineers, 62 firemen and 99 trainmen selected for the National Army. The total number of men in the operating department already called before their local boards is 1,583; the number drafted is equal to 4.9 per cent of those available for service.

Employees entering the military or naval service are considered as on authorized leave of absence and they will retain their seniority rights if exercised within 60 days after date of discharge from government service and if their physical condition is such as to permit them to resume their former duties.

The road proposes to claim exemption only for such men as are indispensable to operation or those specially trained.

Association of Manufacturers of Chilled Car Wheels

The annual meeting of the Association of Manufacturers of Chilled Car Wheels was held at the Waldorf-Astoria Hotel, New York, October 9. George W. Lyndon, president of the association, in his address called attention to the carrying capacity of the chilled iron wheel, saying in part as follows:

"It is now a well established fact that the load that can be carried on a chilled iron wheel is only measured by the ability of the rail to support it. Many 33-in., 950-lb. chilled iron wheels are running under heavy locomotive tenders of 12,000 gal. capacity and are giving such a good account of themselves that no other type of wheel is considered by the users.

"We must pay the closest attention to the quality of our product. We must see that the interior of the 625-lb. and 725-lb. wheel receives recognition in the matter of increased plate thicknesses which can only be obtained by additional weight. We must have a reasonable factor of safety when measured by excessive stresses encountered in service and these heat stresses are now recognized everywhere due to our educational campaign. We are not influenced by commercial considerations in asking for heavier wheels. We know the increased weights are necessary. Perhaps the analyses of the stresses within the wheel may suggest a redistribution of the metal and we may be able to decrease weights, which we will be ready to do with as great an interest as we are now anxious to increase them."

The following officers were elected for the ensuing year: George W. Lyndon, president and treasurer; E. F. Carry and J. A. Kilpatrick, vice-presidents; George F. Griffin, secretary, and F. K. Vial, consulting engineer. The following compose the board of directors: J. M. Buick, vice-president, American Car and Foundry Company; J. A. Kilpatrick, president, Albany Car Wheel Company; W. S. Atwood, chief engineer, Canadian Car & Foundry Company; Charles A. Lindstrom, assistant to president, Central Car Wheel Company; F. K. Vial, chief engineer, Griffin Wheel Company; E. F. Carry, president, Haskell & Barker Car Company; A. G. Wellington, president, Maryland Car Wheel Works; W. C. Arthurs, president, Mt. Vernon Car Manufacturing Company; J. D. Rhodes, president, National Car Wheel Company; F. B. Cooley, president, New York Car Wheel Company; A. J. Miller, general manager, Ramapo Foundry & Wheel Works and Wm. F. Cutler, vice-president, Southern Wheel Company.

Association of Railroad Chief Surgeons

The Association of Railroad Chief Surgeons held its semi-annual meeting at Chicago on October 22. The following papers were read at the meeting: A Review of the Results of the Treatment of Burns with Ambrin, by Dr. L. W. Hopkins, chief surgeon of the Chicago & North Western, Chicago; The Carrel Method of Wound Treatment, by Dr. G. W. Cale, chief surgeon of the Frisco Lines, St. Louis, Mo., and The Hospital Associations and

Their Advantages to Railroad Companies, by Dr. M. P. Parrish, chief surgeon of the Wabash, St. Louis, Mo. Among the open topics of discussion were The Recruiting of Surgeons for War Service, Carious Teeth in Men Entering Railway Service, The Employers Liability and Compensation Law of Illinois, Iodine in the Hands of Railroad Employees, and The Advantages of Establishing Reasonable and Average Periods of Convalescence for Various Injuries.

Next Bridge and Building Meeting at New York

At the closing session of the American Railway Bridge and Building Association, held in Chicago on Thursday of last week, New York was selected as the location for the next annual meeting, subject to change by the executive committee, should conditions arise which would make some other location more desirable.

The annual meeting of the Bridge and Building Supply Men's Association was held the same morning, at which time the following officers were elected: President, L. D. Mitchell, Detroit Graphite Co., Detroit, Mich.; vice-president, P. C. Jacobs, H. W. Johns-Manville Co., Chicago; treasurer, Thomas Lehon, the Lehon Company, Chicago; secretary, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill. Members of executive committee: E. J. Caldwell, the Barrett Company, New York; E. T. Howson, *Railway Age Gazette*, Chicago.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Superintendent of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next meeting, November 22, La Salle Hotel, Chicago.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Morrison Hotel, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sts., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Club has been suspended until after the war.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.

TRAFFIC CLUB OF CHICAGO.—C. B. Signer, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Acting Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evenings except in July and August.

Traffic News

The Public Utilities Commission of Ohio has authorized an increase of 15 per cent in all freight rates, except on coal, coke and iron, for one year, effective November 20.

George W. Hibbard, for several years past general passenger agent of the Chicago, Milwaukee & St. Paul, at Seattle, Wash., and who recently resigned that office, has established a tourist and travel bureau, with headquarters in the Henry building, Seattle.

The government will suspend its priority order of shipment plans on Monday, October 29, in order to devote the entire production of the Ohio, Western Pennsylvania and Michigan bituminous coal mines for that one day to the emergency needs of the domestic consumers of Ohio and Michigan, the fuel administration announced today. This plan of devoting one day's production to the needs of a particular section will be followed in other cases.

The New York, New Haven & Hartford and the Pennsylvania have appointed a joint embargo committee, with headquarters in New Haven, to consider all applications for permits to make shipments through embargoes; this to facilitate communications between the New Haven and the Pennsylvania, and insure prompt action in all necessary cases. The committee will be known as the "New Haven Committee." The chairman is Richard Hackett, assistant to the senior vice-president of the New Haven road.

The United States Department of Agriculture is endeavoring to get merchants to stop shipping poultry in ice. It has been found that chilled dry-packed poultry reaches destination in much better order than the wet ice-packed product. Specialists of the department have studied shipments of chilled dry-packed poultry and wet ice-packed poultry which had been shipped in the same car, and found the dry-packed in excellent condition, while the wet-packed was unfit for use. A number of packers, at the instance of the department, have changed from wet to dry packing.

The Pennsylvania Railroad reports a saving of 56 cars a day in the transportation of less-than-carload freight, from Baltimore, Md., as the result of the "shipping day" or "sailing date" plan for handling this traffic, which was begun on October 1. In the first ten working days of October, 1916, an average of 182 cars was required daily to accommodate the l. c. l. freight originating in Baltimore, while in the corresponding period of the present year a daily average of 126 cars was used. The difference is affected to some extent by differences in embargo conditions, but by far the greater portion of the saving is directly due to the new plan. The increase in the average number of tons per car is 24 per cent. Officers of the road expect, eventually, on the lines East of Pittsburgh and Erie, to save upward of 1,000 cars a day in the transportation of l. c. l. freight.

Transportation Division, Food Administration

The transportation division of the Food Administration, of which E. Chambers, vice-president of the Santa Fe, is the head, has adjusted some troublesome differences between the express companies and the oyster and fish shippers of the country. The express companies, a short time ago, on account of delays to trains because of the abnormal demands made upon them, decided to stamp on each shipping ticket "Subject to delay on account of congestion." What they were seeking to do was to get away from liability for failure to reach the distant market at a certain hour in the day. Protests at once began to come in, most pronounced from the oyster shippers, who claimed that the uncertainty was extremely damaging to their business. Complaint was filed with the Interstate Commerce Commission and suits against the express companies were threatened.

Shippers from different sections of the country appealed to the Food Administration; and its transportation division, after considering the situation carefully, called a conference of the shipping interests and the express companies, with the result that

an understanding has been reached and the express companies are sending out a circular, saying:

"We have no desire to seek relief from responsibility for loss growing out of the negligence of the companies, or of employees; the endorsement on receipts for perishable shipments 'subject to delay, account of congestion,' can only apply to delay beyond control of the express companies; primarily it only puts shippers on notice that to or from the territory described, the expeditious express service which we formerly have been able to afford, cannot now be accorded. Instructions will be issued that preference be given in every way to government shipments and perishable matter, and that extraordinary care be used in reicing products requiring such attention."

Quick relief from threatened traffic congestion, liable to result in the rotting of great quantities of vegetables, has also been effected by the Food Administration, upon notification by the Farmers' and Fruit Growers' Association. The possibility of congestion was brought about by the announcement that the Montauk Steamship Company would cease running its boats after October 11. The producing field, eastern Long Island, is dependent upon the steamship line for most of its shipping, its only other avenue of transportation being over the Long Island Railroad, which also owns the steamship line. The congestion of freight on the railroad without this additional burden, it was stated, precluded any possibility of getting these vegetables to the New York market over the railroad. The transportation division took the matter up with the president of the Long Island road, and the steamship line will continue in operation during the balance of October, and longer if necessary.

The transportation division has requested the California railroads to discontinue the loading of barley for the present; cars are needed for important foodstuffs. The movement of the Washington apple crop, the largest in the history of the state, is to begin at once. The Yakima, Wenatchee and Hood River districts will contribute approximately 18,500 carloads. A serious shortage of shipping facilities in the Payette valley of Idaho has developed in connection with the movement of apples and potatoes. The New York grape crop is now moving rapidly in refrigerator cars. Arrangements for equitable distribution were made by the Food Administration in advance of the movement.

Secretary Baker Praises Troop Movement

Secretary of War Baker, in his weekly statement on the progress of military operations issued on October 22, said:

"An interesting summary of troop movements in the United States shows that since the present mobilization began 914,195 persons have been transported by the railroads for the War Department, of whom 256,815 were transported in standard or tourist sleepers, the remainder in day coaches. This vast movement has been conducted by the railroads of the country without a single serious accident, and the co-operation between the railroads and the department has been most cordial and effective."

Aeroplane Invades Express Company's Field

The Triangle Distributing Corporation, on Thursday, October 11, sent a package of films from Buffalo, N. Y., to Rochester, by aeroplane, the shipment having missed the last train by which it could have reached the consignee in season for the afternoon exhibition. The flight, 70 miles in 45 minutes, was made by Roland Rohlfs, an instructor at the Curtiss Aviation Training School. The showman, at Rochester, having complained to the shipper over the telephone and having received assurances that the pictures would be rushed through, announced the fact to his audience, and the people are said to have waited patiently. The aviator landed in a wheat field some distance outside the city.

In connection with the announcement of this flight the Triangle Distributing Corporation says that fourteen of its distributing branches make shipments numbering 6,617, of about 40 pounds each, every week, presumably all by express. This makes an aggregate of 264,680 pounds a week.

Heavy Shipments of New York State Peaches

The New York State Peach Belt—a 90-mile tract west of Rochester and mostly north of the New York Central main line—shipped this year 6,625 carloads, averaging nine tons each, as compared with 4,459 cars last year, the best season on record. The New York Central's Agricultural Department reports a sweeping shift of the buying markets to more remote points. Sixty-four per cent of this season's fruit was shipped to Pittsburgh or points farther west, as against only 39 per cent last year. The nearby markets took correspondingly lesser proportions. The effect of the longer haul of the bulk of the crop was to tie up the available refrigerator cars for much longer periods and add to the car problem; the record shows that 38 per cent more cars were furnished, to handle an estimated 25 per cent increase in the crop.

Extraordinary weather pranks—particularly a sudden shift from cool to warm—ripened the big crop all at once and severely taxed the facilities of orchards, storage houses and railroads alike for several critical days. The fast-ripening fruit threatened to overflow all bounds; and, in fact, some fruit rotted before it could be gathered, the yield being much greater than the growers had estimated. Also, there were brief shortages of cars at some points. The total shipments by the New York Central, 6,625 cars at 18,000 lb. each, aggregated 119,250,000 lb. Only ten years ago the peach shipments were but 434 carloads; in 1908 they were 1,173 cars; 1912, 2,690 cars.

The Agricultural Department of the New York Central, headed by F. S. Welsh, kept a dozen trained inspectors traveling in automobiles, actively covering the peach districts. These men kept in close touch with growers, suggested better loading methods, reported local car shortages, watched against impaired fruit that would involve claims, noted the icing and other conditions, and in co-operation with local agents assisted toward most efficient freight service. This special service showed such benefits that the railroad company will at once extend it to the crop shipments of apples, celery, potatoes and other perishables.

Illustrated booklets were circulated giving detailed directions to growers regarding the safest methods of loading cars, and the shippers responded with hearty co-operation. Fully 60 per cent of the growers adopted the railroad's suggestion for end-to-end loading of the bushel baskets in four tiers, to prevent shifting in transit. The mobilization of refrigerator cars began early, and on August 16 there were 4,000 cars held in readiness. Throughout the succeeding month an average of 3,000 cars were kept in waiting for the ripening. At 75 cents per car per day, this item of preparedness cost $2,250 a day, or $67,500 for the month.

Cool weather delayed ripening until, late in September and heroic efforts could scarcely meet demands for a few days. The "peak" of the harvest was far the heaviest known. During this rush week the daily movement was 362 carloads, as compared with 240 cars daily in the busiest week last year, an increase of 50 per cent. The figures for the entire season show that an average of 187 cars were moved daily in 1917, as against 135 cars daily for the heavy 1916 crop.

The shift of peach shipments this year to more distant markets is shown by percentages of the distribution of the crops of 1917 and 1916, by the railroad records, as follows:

	1916		1917	
	Cars	Per Cent	Cars	Per Cent
To New York State points	1,115	25	861	13
To New England	401	9	265	4
To Pennsylvania and points South	1,204	27	1,259	19
To Pittsburgh and points West	1,739	39	4,240	64
Total	4,459	100	6,625	100

The shipments to the west, it will be seen, were almost 2½ times as large this year as last.

Japanese Railroad Construction

The Imperial Japanese Diet has passed a bill authorizing the expenditure of $4,980,000 for the extension of the Boryo and Giran railway lines in Taiwan. Of this sum $996,000 is to be expended annually for a period of five years, the railways to be completed by the end of the fiscal year 1921. Operations are to be begun before the end of this month (September, 1917). The construction contemplated is the extension of the Boryo Line from Ako to Boryo, with a view to serving the agricultural interests along the plain which the line will traverse, and the extension of the Giran Line from Hatto to Suwo. The Giran extension, which is chiefly through mountainous country, is expected to aid the development of coal mining in Zuiho and Chosokei districts, where, hitherto, operation has been unsuccessful because of the difficulty of getting the coal out. It is expected also that new veins of ore will be discovered.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Rates on Idaho Lumber Not Too High

Western Pine Manufacturers' Association et al v. Cincinnati, Indianapolis & Western et al. Opinion by Commissioner Clark:

The fact that through rates are composed of the aggregates of intermediate rates does not in itself establish their unreasonableness. Rates on lumber and lumber products from the inland empire to central freight association territory not shown to be unreasonable, unjustly discriminatory, or unduly prejudicial. Minimum weights not shown to be unreasonable. (46 I. C. C., 650.)

Rice Rates Reasonable

Lake Charles Rice Milling Company v. Southern Pacific Company et al. Opinion by Commissioner Clark:

Rates on rough rice from California points to Lake Charles, La., and on clean rice from Lake Charles to trunk line and Atlantic seaboard points not shown to be unreasonable or unduly preferential or prejudicial. Charges on certain shipments which exceeded those that would have accrued on the basis of the aggregates of the intermediate rates found unreasonable and reparation awarded. Fourth section relief denied. (46 I. C. C., 661.)

Order as to Increased Rate Procedure

The Interstate Commerce Commission on Wednesday issued its fifteenth section order No. 1, prescribing the practice to be followed by railroads in presenting applications for permission to file tariffs containing increased rates, as required by the recent amendment to the fifteenth section of the law. The order is practically the same as the tentative draft, described in the *Railway Age Gazette* of October 12, page 661, which was the subject of a hearing on October 15. The form of application prescribed contains space for a statement as to what steps have been taken to bring the application to the attention of shippers and receivers.

Illinois-to-Iowa Rates Reduced

State of Iowa v. Wabash Railway et al. Opinion by Commissioner Daniels:

Upon complaint that commodity rates between Peoria or Springfield, Ill., and Des Moines and other designated interior Iowa cities, are not in compliance with the fourth section order of the commission in *Des Moines Commodity Rates,* 34 I. C. C., 281; and that they are unreasonable and unduly prejudicial; *Held,* That while the fourth section order in the case referred to has in terms been complied with, the finding of the commission in that case has not been followed; that the maintenance of higher rates between Peoria or Springfield and the designated interior Iowa cities than between Peoria or Springfield and St. Paul is unduly prejudicial; and that the rates in other respects are not found unreasonable. Fourth section relief denied. (46 I. C. C., 703.)

New York Storage and Reconsignment Charges Justified

New York Produce Exchange (on behalf of flour dealers) v. Baltimore & Ohio et al. Opinion by Commissioner Clark:

Reconsignment charge of $2 per car established as an incentive to the direct billing of carload freight to places of final delivery within New York lighterage limits, and having for its object the relief of the congestion and car shortage situation at New York, found justified. Rule that a shipper from an interior point in the United States must, as a condition precedent to the issuance of a through export bill of lading, guarantee the payment of such storage charges as may accrue at New York after the expiration of free time, found justified. Rule that carload freight moved to New York as domestic traffic and subsequently exported cannot be accorded the benefit of the more liberal storage charges and regulations applicable to export traffic, which rule was designed to prevent the circumvention of embargoes against the movement of freight to New York before ship space is secured, found justified. (46 I. C. C., 666.)

COURT NEWS

The steam railroads entering Washington, D. C., on October 19 filed injunction suits in the District of Columbia Supreme Court against four ticket brokers to restrain them from selling tickets at reduced rates. The court issued rullings on each of the brokers named requiring them to show cause on November 9 why they should not be enjoined from selling any railroad ticket issued by the plaintiff companies or their connecting lines.

Interstate Commerce Commission Sustained

The Circuit Court of Appeals, Sixth Circuit, refused to disturb a finding of the Interstate Commerce Commission that a through rate from Houston to Chicago was unreasonable, so far as it exceeded the sum of the local rates, the finding being supported by evidence, though the local rate from Houston to New Orleans, used as a basis of comparison, applied only to shipments destined to points beyond New Orleans to which no through rates were published; no other rate from Houston to New Orleans being shown, and there being no attempt to show any reason for any distinction between Chicago and other points beyond New Orleans.—Morgan's Louisiana & Texas R. & S. Co. v. Isaac-Joseph Iron Co., 243 Fed. 149. Decided June 5, 1917.

Hours of Service Act—Excusable and Inexcusable Derailments

In an action for the penalty for keeping trainmen on duty more than 16 hours, the railroad company filed pleas admitting the overtime, but alleging that it was due to the derailment of cars and the necessity of clearing the track, and that the accident occurred when it was impracticable to substitute another crew. The Federal District Court, S. D. Florida, sustained demurrers to the company's pleas because they were silent as to the cause of the derailment, holding that if the derailment could have been avoided by ordinary foresight the accident could not be said to be unavoidable, and unless it was unavoidable it was no defense to the action brought.—United States v. Charlotte Harbor & Northern, 243 Fed., 772. Decided August 1, 1917.

Safety Appliance Act—"Nearest Available Repair Point"

In a suit for penalties under the Safety Appliance Act it was alleged that the Boston & Maine Railroad hauled over its road, from Gardner, Mass., westward to East Deerfield, a box car which was out of repair by reason of a coupler being missing from the A end of the car. The car, billed from South Mills, Me., to Lake Junction, N. Y., was in a train which left Boston during the night of August 23, 1916; it became defective and was left behind at Gardner, between 1 and 2 o'clock the next morning, with one drawbar pulled out. It was turned around and was attached by its good coupler, behind the caboose, on a freight train going west from Gardner at 7:40 a. m. on August 24. On this train it was taken to East Deerfield, where it was repaired. This was the movement on which the complaint was based. The car contained about 45 pieces of freight, including one cask of gasolene. Gardner is not a repair point for such defects as the car developed. The nearest such point was Fitchburg, 17 miles east from Gardner; East Deerfield is 38 miles west. The freight in the car was destined to points west. The government contended that the car ought to have been taken to Fitchburg, because the distance was shorter. The Federal District Court held that the word "available" in the phrase "to the nearest available point" in the statute cannot be ignored. Availability obviously depends, under the statute, on other conditions besides that of mere distance. Whether Fitchburg was, under all the circumstances, the "nearest available" point for the repair of this car was a matter of business judgment. Upon such a question, involving as it does many elements, the decision of the men in charge of the business, if made in good faith, is entitled to serious consideration. It was not shown to have been wrong in this instance. On some of the freight speedy delivery may have been important, and it did not appear that there was any car at Gardner into which it could have been transferred. Although the distance of the haul was 20 miles longer than that to Fitchburg, the car "gained on the voyage," and its presence did not appear to have substantially increased the risk of injury to employees. Judgment was entered for the defendant.—United States v. B. & M., 243 Fed., 795. Decided September 22, 1917.

Equipment and Supplies

LOCOMOTIVES

THE CHILIAN STATE RAILWAYS is inquiring for prices on 20 locomotives.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for one second-hand American type locomotive with 16 in. to 18 in. by 24 in. cylinders, and a weight of from 60 to 75 tons; also for 5 second-hand 6-wheel switching locomotives, 3 with a tractive effort of 30,000 lb., and 2 with a tractive effort of 20,000 lb.

FREIGHT CARS

THE UNITED STATES GOVERNMENT is asking for prices on 10,000 freight cars.

WILSON & COMPANY, Chicago, are in the market for 200 refrigerator cars.

THE BARRET COMPANY, New York, is reported as inquiring for 100 8,000-gal. tank cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, is in the market for 2 second-hand box cars of from 30 to 50 tons' capacity.

THE ILLINOIS CENTRAL is asking prices on 1,000, 70-ton hopper cars and it is expected will ask for bids on 1,500 50-ton general service cars.

THE WESTERN PACIFIC, reported in the *Railway Age Gazette* of October 12, as asking prices on 1,500 freight cars, has withdrawn its inquiries for these cars.

THE CHILIAN STATE RAILWAY, reported in the *Railway Age Gazette* of August 3, as inquiring for prices on 400 stock and 600 box cars is now asking for prices on 330 box, 230 stock, 200 gondola and 240 flat cars.

THE UNION PACIFIC, reported last week as contemplating the purchase of 5,000 freight cars is now reported as contemplating the purchase of 500 flat cars, 1,000 hopper cars, 1,000 drop bottom gondolas, 1,000 single deck stock cars, 200 tank cars, 50 caboose cars and 1,000 logging trucks.

THE RUSSIAN GOVERNMENT, reported in the issue of October 19 as having issued inquiries for cars, has placed tentative orders for pood cars as follows: American Car & Foundry, 10,000; Standard Steel Car Company, 10,000; Pressed Steel Car Company, 6,000; Seattle Car & Foundry Company, 3,000; Keith Car Company, 1,000. These orders may be changed to include a number of eight-wheel freight cars.

PASSENGER CARS

THE CENTRAL OF GEORGIA has ordered 7 passenger coaches, 2 parlor cars, 3 express, 3 combination coach and baggage cars and 2 combination baggage and mail cars from the Pullman Company. This order was reported in last week's issue as 16 cars.

IRISH RAILWAY DISPUTE SETTLED.—A conference held recently in Dublin resulted in a settlement of the Irish railway dispute. The agreement arrived at provides that the workers on Irish railways shall be placed in exactly the same position as workers on English railways. An extra bonus of 3s. ($0.72) per week has been granted to the Irish railwaymen, and the whole bonus is to be converted into a war wage, with consequent increases for overtime and Sunday work.

TRADE OF THE PORT OF LONDON.—The annual report of the Port of London Authority states that the total net tonnage of vessels which arrived and departed with cargoes and in ballast from and to foreign countries and British possessions, and coastwise, during the year ended December 31 last was 24,976,437 tons as compared with 30,890,531 tons during the year 1915. Both totals are exclusive of the tonnage of vessels employed by the government in connection with the war.

Supply Trade News

Clyde F. Burns, managing editor of the Railway Review, Chicago, has resigned to become general manager of the Richey Construction Corporation, New Port Richey, Fla., which is engaging in the construction and management of public utilities.

L. F. Wilson, vice-president of the Bird-Archer Company, Chicago, who was reported in last week's issue of the *Railway Age Gazette* as having been called into active service as major in the second division of the regular army, informs us that this order has been rescinded.

Oscar F. Ostby has opened offices at 2736 Grand Central Terminal, New York, to handle general railway supplies. He has been appointed eastern representative of the Grip Nut Company, Chicago, and manager of sales of the Glazier Manufacturing Company of Rochester, N. Y., the latter company making a complete line of oil headlights, and reflectors and cases for all kinds of headlights. Mr. Ostby has been one of the energetic members of the Railway Supply Manufacturers' Association, having been its president in 1915-16. He has been much interested in the locomotive headlight field in the interest of the International Acetylene Association, strenuously combating the passage of headlight laws in several states the requirements of which demanded the electric equipment only. He was born March 5, 1883, and received his education in the public schools of Providence, R. I. From 1901 to November, 1904, he was engaged in publicity work. Since then he has been connected with the Commercial Acetylene Railway Light & Signal Company and the Refrigerator, Heater & Ventilator Car Company, serving the latter company as general manager.

O. F. Ostby

Major Robert H. Murray, formerly general manager of the Chicago Bridge & Iron Works, Chicago, is now in command of the first battalion, 311th Engineers, Camp Grant, Rockford, Ill. He first received a commission as captain, but following a period of training at Fort Leavenworth, Kans., was promoted to major.

The Walter A. Zelnicker Supply Company, St. Louis, Mo., has recently secured the services of W. H. Bramman, who is acting in the capacity of assistant to the president. Mr. Bramman before becoming associated with the Zelnicker Supply Company was connected with the American Carbon & Battery Company.

Warren R. Roberts, president of the Roberts & Schaefer Company, engineers and contractors, Chicago, has received a commission as major under the Quartermaster General as executive officer in charge of new emergency construction work during the war. Mr. Roberts left Chicago on October 22 to take up his active work and residence in Washington.

John C. Sullivan, engineer and contractor, and formerly assistant superintendent of the O'Rourke Engineering Construction Company, died at his home, in New York city, on October 23. As assistant superintendent of the O'Rourke Engineering Construction Company he had charge of the construction of one of the North River tunnels of the Pennsylvania railroad.

In connection with the 3½ per cent semi-annual preferred dividend recently declared by the Lima Locomotive Works, Inc., it is understood that the earnings of the company for the period covered by the dividend were about five times the dividend re-

quirement, leaving a balance for the common stock at the annual rate of about 17 per cent. Business now on the books of the company aggregates nearly $21,000,000.

Major P. G. Jenks, Quartermaster Officers' Reserve Corps and in civil life assistant to the president of the Standard Steel Car Company, Chicago, presented regimental and national colors to the Thirty-fifth Engineers at Rockford, Ill., on October 19, on behalf of car construction companies which have orders from the government. Very appropriately the presentation speech was made by Louis Pitcher, a civil war veteran, who exactly 53 years before (October 19, 1864) was color bearer in the Union army in the battle of Cedar Creek. The Thirty-fifth Engineers is a railway regiment which is being recruited for the purpose of doing car construction work on the American-operated lines in France.

H. P. Meredith, master mechanic of the Maryland and Delaware divisions of the Philadelphia, Baltimore & Washington, has resigned to go to E. I. du Pont de Nemours & Co. as engineer in charge of mechanical maintenance and shop methods, with headquarters at Wilmington, Del. He was born January 12, 1879, in Gloucester county, Virginia, and was educated in private schools in Virginia and public schools of Altoona, Pa. He entered the service of the Pennsylvania Railroad as a special apprentice in 1897. In 1901 he became motive power inspector of the Buffalo & Allegheny Valley division at Buffalo; in 1903 he was promoted to assistant master mechanic of Altoona machine shops, and on July 1, 1905, was promoted to the position of assistant to the general superintendent of motive power at Altoona. He was made master mechanic of the Baltimore division at Baltimore, Md., on May 1, 1910, and on October 15, 1914, was promoted to master mechanic of the Williamsport and Sunbury divisions, with headquarters at Sunbury, Pa. On July 1, 1916, he was promoted to the position which he has just resigned. He is a member of the American Society of Mechanical Engineers, the Master Car Builders' Association, and the American Railway Master Mechanics' Association.

Page Steel & Wire Company

This is the new name of the Page Woven Wire Fence Company, the change having been made because of the growth and diversification of the company's business. Beginning with wire fencing, the Page company has extended its activities so as to include many other products of high-carbon steel, including wire rods, rope wire and spring wire. The company also has exclusive licenses for the sale of "Armco" iron wire, made by the American Rolling Mill Company of Middletown, Ohio, and other specialties. E. C. Sattley, general manager of the Page Steel & Wire Company will have an office at 644 Union Arcade, Pittsburgh, Pa.; but correspondence for the different departments should be addressed, as before, to Monessen, Pa., Adrian, Mich., New York City or Chicago.

Anniversary of Joseph T. Ryerson & Son

Joseph T. Ryerson & Son, Chicago, will celebrate the seventy-fifth anniversary of its organization on November 1. The founder, Joseph T. Ryerson, came to Chicago in 1842 and located in a two-story brick building near Clark and Water streets. He secured a stock of $20,000 worth of iron and began business as the accredited agent of Wood, Edwards & McKnight, of Pittsburgh. In 1879 he took his son, Edward L. Ryerson, into partnership, and upon his death on March 9, 1885, the business passed to his son. Edward L. Ryerson continued as president of the company until 1911, when he was made chairman of the board of directors. His sons, Joseph T. Ryerson, Donald M. Ryerson and Edward L. Ryerson, Jr., have entered the firm during the past 15 years and are now vice-presidents.

The Chicago plant of the firm has grown continuously in size with frequent changes in location to permit further expansion, and at the present time is located at Sixteenth and Rockwell streets. The plant is divided into two main sections, one division including a warehouse 500 ft. by 500 ft., housing heavy materials, such as large billets, plates and structurals, and the other a five-story office building and a warehouse 500 ft. by 500 ft., in which are stored bars, shafting sheets, tubes, rivets, bolts, nuts, boiler specialties, machinery, etc.

The eastern plant of the company occupies a 10-acre site on West Side avenue, Jersey City, at the junction of the Hackensack river and Newark bay. The building is 245 ft. by 470 ft., with a floor space of approximately 137,000 sq. ft. The company acquired a St. Louis plant by purchasing the W. G. Hagar Iron Company, thereby adding to its own products a line of mill, mine and boilermakers' supplies manufactured by the Hagar company. A new plant will be opened at Detroit, Mich., on November 1, to take care of the increased demand for quick shipments of iron and steel in the territory served by that city.

Anniversary of Taylor-Wharton Iron & Steel Company

The one hundred and seventy-fifth anniversary of the founding of the iron industry at High Bridge, N. J., which finally developed into the Taylor-Wharton Iron & Steel Company, was celebrated in that town on October 13. The date was also the 25th anniversary of the first making of manganese steel in America, the first heat of manganese steel having been run off by the Taylor Iron & Steel Company in 1892. The introduction of manganese steel into track work by William Wharton, Jr., & Co., occurred in August, 1894, a little over 23 years ago. The celebration was largely attended by officers and employees of the Taylor-Wharton Iron & Steel Company and its subsidiaries, and the entertainment features included a parade, speeches by prominent men, a band concert, a moving picture program, a clam-bake and dancing. An important part of the festivities was the presentation of gold medals to employees who had been in the service of the company or allied companies for 50 years or more, and silver medals to those with records of service of from 25 to 50 years.

The local deposits of iron ore, abundant timber for charcoal, and water power were the chief factors leading to the location of the iron industry at High Bridge. In colonial times Robert Taylor took over the management of the business, and from him it passed through five generations in a direct line of descent. In 1912 the Taylor Iron & Steel Company purchased William Wharton, Jr., & Co., Inc., Philadelphia, for the purpose of extending the use of manganese steel in track work. The present Taylor-Wharton Iron & Steel Company has five plants: the High Bridge plant, operated directly under the firm name and devoted entirely to the manufacture of manganese steel and other special steel castings; the Easton (Pa.) plant operated under the name of William Wharton, Jr., & Co., Inc., specializing in track work, such as frogs, switches, curves and track layouts for steam and electric roads, as well as all kinds of light and heavy iron and steel forgings for castings; the Philadelphia Roll & Machine Company, making rolls and rolling mill machinery, iron and steel castings, and machinery of a miscellaneous nature; the Manganese Steel Safe Company, Plainfield, N. J., and the Tioga Steel & Iron Company, Philadelphia, which produces light and heavy miscellaneous hammered and hydraulically pressed forgings, and is now turning out a heavy tonnage or rough machined and heat-treated forgings for 4-in. Navy guns.

TRADE PUBLICATIONS

INSULATING BRICK.—The Armstrong Cork & Insulation Company, Pittsburgh, Pa., has issued a folder describing tests made to determine the economy in fuel obtained by the use of Nonpareil insulating brick for boiler settings. One illustration is included showing the method of applying the insulating brick in the boiler setting. The tests showed that 63 per cent of the heat lost was saved by the use of this brick.

POWER REVERSE GEAR.—The Economy Devices Corporation, 30 Church street, New York, has issued bulletin No. 115 describing the type "B" Ragonnet power reverse gear, which is a new design recently placed on the market. The catalogue enumerates the advantages of the power reverse gear and explains the cushioning principle of the type "B" gear. A sectional drawing of the gear is included showing the names of the various parts of the gear.

LOCOMOTIVE FEEDWATER HEATING.—The Locomotive Feedwater Heater Company, 30 Church street, New York, has issued its first bulletin describing the advantages to be obtained by heating the feedwater for locomotive boilers. The bulletin points out the saving to be made in waste heat feedwater heating. Charts showing what economy may be expected by heating the feedwater with exhaust steam from the cylinders are given, and illustrations showing the application of the feedwater heating apparatus to locomotives.

Railway Construction

BUFFALO, ROCHESTER & PITTSBURGH.—Work is now under way near Punxsutawney, Pa., on the construction of a new engine terminal, a 16-stall roundhouse and auxiliary facilities. The work includes changing the course of a highway from the east to the west side of the tracks for a distance of over one mile and ten miles of additional yard track will be constructed. It is expected that the work will be finished by January next. The freight transfer platform at Punxsutawney and the Ganson street freight house at Buffalo are being enlarged.

CAMBRIA & INDIANA.—Work has been completed on a new extension from Revloc Junction, Pa., via Beulah, to Revloc, about 6½ miles.

CANTON & OHIO RIVER (ELECTRIC).—This company has been authorized to build, lease and operate an electric line from Canton, Ohio, to Wheeling, W. Va. The projected route from Canton is southeast via Osnaburg, Minerva, Malvern and Carrollton to Toronto, then south via Steubenville, and Martin's Ferry to Bridgeport, thence east across the Ohio river to Wheeling, about 100 miles. The promoters expect to develop a traffic in coal, manufactured goods and farm products. Milton Bejach, president; James D. White, secretary and treasurer, Pittsburgh, Pa.

CHICAGO, ROCK ISLAND & PACIFIC.—This road has awarded a contract to the Railroad Water & Coal Handling Company, Chicago, for a high pressure water system for the fire protection of its elevators at South Chicago.

ILLINOIS CENTRAL.—This company has awarded a contract to the Railroad Water & Coal Handling Company, Chicago, for a 600-ton coaling station at Kankakee, Ill. The structure will be of timber construction with a concrete substructure. Automatic machinery will be used throughout. A contract was also awarded to the same firm for a fire protection system for yards and shops at Noncona (Memphis), Tenn.

OREGON SHORT LINE.—This company has awarded a contract to the Utah Construction Company, Ogden, Utah, for the construction of a line from Garland, Utah, south along the west bank of Bear river to Bear River City, Utah, 9.7 miles. It will connect the line from Corinne, Utah, to Malad, Idaho, with the line from Ogden, Utah, to McCannon, Idaho. The maximum grade will be 1½ per cent and the maximum curvature 3 deg. The grading will be light. The only structures to be built are 20 spans of trestle. About 60 per cent of the grading is completed.

The company has completed grading on a spur from Bakers, Utah, north 3.8 miles.

PELLA-LEFFLER SHORT LINE.—This company has been incorporated with $300,000 capital stock to build a line from Pella, Iowa, to a junction with the Wabash, about 4½ miles. P. H. VanGorp, secretary and treasurer, Pella, Iowa.

PHILADELPHIA, BALTIMORE & WASHINGTON.—A contract has been given to the James McGraw Company for the grading and masonry work on the Chester & Philadelphia branch now under construction to Hog Island, 11.2 miles. Contracts for three small span bridges on the line near Chester, Pa., have been let as follows: For the superstructures of bridges over Darby and Crum rivers to the Bethlehem Steel Company and for the superstructure for Ridley river bridge to the McClintic-Marshall Company.

SHELBYVILLE & FRANKFORT (ELECTRIC).—The plans of this company call for building an electric line from Shelbyville, Ky., east, to connect with Clay Village, Peytona, Grafenberg and Bridgeport, about 20 miles. The work will include building four steel bridges and two power houses. Contracts are expected to be let in the near future, and construction work completed in 1918. The company expects to develop a traffic in farm products. E. H. Taylor, Jr., president, Frankfort, Ky.

SOUTHERN RAILWAY COMPANY IN MISSISSIPPI.—This company has authorized improvements to its passenger station at Columbus, Miss., consisting of the reconstruction of an umbrella shed with concrete pavement under it. The improvements will also include the erection of a new baggage room and ice house.

Railway Financial News

CENTRAL OF NEW JERSEY.—The New Jersey State Board of Public Utility Commissioners has approved an agreement of merger and consolidation between the Central of New Jersey and the following connecting railroads, which are all a part of the Central's system, but which have been operating under separate corporate names: Buena Vista, Carteret & Sewaren, Carteret Extension, Cumberland & Maurice River, Cumberland & Maurice River Extension, Freehold & Atlantic Highlands, Lafayette Railroad, Manufacturers' Extension, Middle Brook, New Jersey Southern, Navensink Railroad, Passaic River Extension, Raritan North Shore, Sound Shore, Toms River, Toms River & Barnegat, Vineland Railroad, Vineland Branch, West Side Connecting, and the West End Railroad Company.

ILLINOIS CENTRAL.—The directors have declared the regular quarterly dividend of 1½ per cent and an extra dividend of 1 per cent, the latter for the year 1917. Both dividends are payable December 1 to stock of record November 5.

MISSOURI, KANSAS & TEXAS.—See item under Court News, *Railway Age Gazette*, October 19, 1917, page 718.

MOUNT AIRY & EASTERN.—This 19-mile line operating between Mount Airy, N. C., and Kibler, Va., has been sold to Washington parties.

NEW MEXICO CENTRAL.—This road has been bought by the Federal Export Corporation of 115 Broadway, New York. It lies in a section of New Mexico that has recently been opened to oil developments. The line is 120 miles long, from Santa Fe, N. M., on the main line of the Atchison, Topeka & Santa Fe, south and southeast to Willard, 80 miles, where it crosses a branch of the Santa Fe, and thence to Torrance, where it connects with the El Paso & Southwestern. The Federal Export Corporation contemplates the electrification of the road or its re-equipment with internal combustion locomotives.

NEW YORK, NEW HAVEN & HARTFORD.—Authority to issue $45,000,000 of new 7 per cent preferred stock was given the directors at a special meeting of the stockholders October 24. The proposed issue would take up floating indebtedness now represented by a like amount of one-year 6 per cent notes, collateral for which to the amount of $96,512,516 (book value) has been pledged.

TENNESSEE CENTRAL.—At the fifth attempt to sell this road at auction, no bids were received, and the sale was adjourned to November 30.

WESTERN MARYLAND.—It is said John D. Rockefeller and closely allied interests have agreed to purchase the $5,000,000 three year 7 per cent notes authorized by the stockholders at their annual meeting. It is understood that these notes will be issued in payment of loans made to the company by Mr. Rockefeller and his associates.

STRIKE IN ARGENTINA.—According to a press despatch, a railway strike of 23 days' duration which paralyzed the transportation system of Argentina was brought to an end on October 18. The strikers notified the president that they were not satisfied with a 10 per cent increase in pay granted by the railroad companies, but that they were resuming work as a mark of personal respect to the nation's executive.

CHEMICAL HEATER FOR SOLDIERS.—THE TECH of Boston tells of an individual heating apparatus for soldiers which Colonel Robert L. Howze is now testing to determine its practicability. The heater is not larger than a canteen and it is claimed that it will keep hot for 36 hours and can then be recharged for another period. The heater is filled with a chemical fluid which is first heated by immersion in boiling water. The chemical action increases the heat to a high degree and maintains it for 36 hours. A new charge is a chemical substance no larger than a pea. The "stove" and fuel may thus be carried by a soldier in his haversack.

Railway Officers

Operating

J. C. Bailey has been appointed car service agent of the Bessemer & Lake Erie, with headquarters at Pittsburgh, Pa., succeeding F. A. Huber, resigned to go with another company, effective November 1.

W. C. Hamilton, trainmaster of the Copper Range, also has been appointed car accountant, with office at Houghton, Mich., succeeding G. H. Wescott, who continues in his position of general freight and passenger agent.

Frank Walker has been appointed trainmaster of the Springfield district of the Illinois Central, with headquarters at Clinton, Ill., succeeding Harry L. Moffett, granted leave of absence on account of ill health, effective October 8.

E. B. Kessler, assistant freight trainmaster of the Long Island Railroad at Jamaica, N. Y., has been appointed freight trainmaster vice W. E. Canning, promoted, and John Roe, assistant trainmaster at Jamaica, has been appointed assistant freight trainmaster, succeeding Mr. Kressler.

W. E. Fuller, special representative of the vice-president in charge of operation of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed superintendent of the Galesburg division, with office at Galesburg, Ill. E. J. Worden, superintendent at Galesburg, has been transferred to the La Crosse division at La Crosse, Wis., succeeding M. F. MacLaren, who has joined the Russian Railway Service Corps. Effective October 23.

J. W. Jones, superintendent of the Western division of the Wabash at Moberly, Mo., has been appointed superintendent of the St. Louis Terminal division, vice C. E. Ocheltree assigned to other duties. W. H. Eckard, superintendent of the Moberly division at Moberly, Mo., succeeds Mr. Jones, and L. W. Karnes, trainmaster at Decatur, Ill., has been promoted to superintendent of the Moberly division, with office at Moberly, Mo., vice Mr. Eckard.

O. R. Belcher, whose appointment as superintendent of the Nevada-California-Oregon, with headquarters at Alturas, Cal., was announced in the *Railway Age Gazette* of September 28, was born at Bryan, Tex., on October 7, 1881. He began railway work in July, 1897, with the Texas Central, afterwards the Missouri, Kansas & Texas of Texas, and was employed successively as section laborer, foreman, agent, train despatcher and conductor, until his recent appointment announced above.

F. H. Hammill, assistant general superintendent of the Chicago & North Western at Bonne, Ia., has been appointed general superintendent of the newly created northern district of the Union Pacific, consisting of the Nebraska, Wyoming and western divisions, with headquarters at Omaha, Neb.; and E. Stenger, general superintendent at Omaha, has been transferred to Kansas City, Mo., to become general superintendent of the newly created southern district, consisting of the Kansas and Colorado divisions, effective October 20.

T. F. Lowry, superintendent of the Rocky Mountain division of the Northern Pacific, at Missoula, Mont., has been transferred to the Montana division with headquarters at Livingston, Mont., to succeed B. O. Johnson, who has been granted a leave of absence to join the Russian Railway Service Corps. F. R. Bartles, superintendent of the Minnesota division with headquarters at Staples, Minn., has been transferred to the Rocky Mountain division to succeed Mr. Lowry. E. J. Hackenberg, trainmaster at Staples, Minn., has been promoted to superintendent at Staples to succeed Mr. Bartles. A. W. McClelland has been appointed trainmaster in place of Mr. Hackenberg. Effective October 20.

E. E. Nash, assistant general superintendent of the Chicago & North Western at Chicago, has been transferred to Boone, Iowa, succeeding F. H. Hammill, appointed general superintendent of the Union Pacific. H. M. Eicholtz, superintendent of the Chicago & North Western at Chicago, has been promoted to assistant general superintendent vice Mr. Nash; B. E. Terpning, superintendent at Belle Plaine, Iowa, has been transferred to Chicago vice Mr. Eicholtz; F. O'Brien, superintendent at South Pekin, Ill., has been transferred to Belle Plaine vice Mr. Terpning; C. E. Helmer, assistant superintendent at Winona, Minn., has been promoted to superintendent at South Pekin vice Mr. O'Brien, and S. S. Long, division engineer of the Wisconsin division, has been appointed assistant superintendent at Winona, Iowa, vice Mr. Helmer.

W. B. McCaleb, superintendent of the Philadelphia division of the Pennsylvania Railroad, has been promoted to general superintendent of water companies to succeed the late George S. Cheyney; J. K. Johnston, superintendent of the Tyrone division, Tyrone, Pa., has been appointed superintendent of the Philadelphia division to succeed Mr. McCaleb; J. B. Hutchinson, Jr., assistant superintendent of the Pittsburgh division, at Youngwood, Pa., has been promoted to superintendent of the Tyrone division; H. H. Russell, division engineer of the Pittsburgh division, at Pittsburgh, has been promoted to assistant superintendent of the Pittsburgh division, and George C. Koons, assistant engineer of maintenance of way in charge of bridges and structures at Philadelphia, has been promoted to assistant superintendent of the New York division. Effective October 25.

J. M. Gruber, vice-president of the Great Northern, with headquarters at St. Paul, Minn., has assumed also the duties of general manager heretofore discharged by George H. Emerson, whom the Government has called to take charge of the Russian Railway Service Corps, and who has been granted an indefinite leave of absence by the Great Northern for that purpose. C. O. Jenks, assistant general manager at St. Paul, has been appointed assistant general manager of the lines west of Williston, N. D., with headquarters at Seattle, Wash. F. Bell, general superintendent at St. Paul, has been appointed assistant general manager of the lines from Williston, N. D., east, with the same headquarters. F. S. Elliott, general superintendent at Great Falls, Mont., has been appointed general superintendent of the lake district, with office at Superior, Wis., succeeding G. S. Stewart, given an indefinite leave of absence to enter the Russian Railway Service Corps. L. W. Bowen, assistant general superintendent at St. Paul has been appointed general superintendent of the eastern district, with headquarters at St. Paul, succeeding F. Bell, promoted. W. R. Smith, assistant general superintendent at Spokane, Wash., has been appointed general superintendent of the Central district, with office at Great Falls, Mont., in place of F. S. Elliott, transferred. P. F. Keating, superintendent at Whitefish, Mont., has been appointed assistant general superintendent of the eastern district, with headquarters at St. Paul, succeeding L. W. Bowen, promoted. John Sesser, superintendent at Superior, Wis., has been appointed assistant general superintendent of the central district, with headquarters at Great Falls, Mont., to succeed F. D. Kelsey, who has been transferred as superintendent of the Superior and Mesabi divisions at Superior in place of Mr. Sesser F. J. Gavin, superintendent at Spokane, Wash., has been appointed assistant general superintendent of the western district, with the same headquarters, vice W. R. Smith, promoted. J. L. Close has been appointed superintendent of the Spokane division at Spokane, succeeding F. J. Gavin, promoted. M. C. LaBertew has been appointed superintendent of the Havre division, with headquarters at Havre, Mont., vice E. D. Woodcock, assigned to other duties. M. J. Flanigan, general master mechanic at Great Falls, has been appointed superintendent of the Kalispell division, with headquarters at Whitefish, Mont., succeeding P. F. Keating, promoted. Effective October 20.

Traffic

Frank I. Smith has been appointed commercial agent of the St. Louis Southwestern at Denver, Colo.

R. M. Dozier, assistant general freight agent of the Missouri Pacific at Omaha, Neb., has been transferred to Memphis, Tenn., effective October 15.

John B. Patterson, passenger agent of the Atlanta & West Point and the Western Railway of Alabama, at Montgomery, Ala., has been appointed district passenger agent, with office at Montgomery.

Lewis C. Mahoney, chief clerk in charge of Interstate Commerce Commission matters in the general freight office of the

Chicago, Burlington & Quincy at Chicago, has been promoted to assistant general freight agent in charge of the same class of work, with headquarters at Chicago, effective October 12. Mr. Mahoney was born on April 10, 1876, and entered the service of the Burlington on November 1, 1906, as a clerk in the general freight office at Chicago. He was later promoted to tariff clerk and then to chief clerk in charge of I. C. C. matters.

Engineering and Rolling Stock

H. P. Meredith, master mechanic of the Maryland and Delaware divisions of the Philadelphia, Baltimore & Washington, at Wilmington, Del., has resigned to go into other business.

O. B. Schoenky, superintendent of shops of the Southern Pacific at Los Angeles, Cal., has been appointed master mechanic of the Tucson division, with office at Tucson, Ariz., vice W. C. Petersen, transferred.

L. Jutton, division engineer of the Chicago & North Western at Madison, Wis., has been transferred to the Wisconsin division, with headquarters at Chicago, vice S. S. Long, and F. W. Hillman succeeds Mr. Jutton as division engineer at Madison.

H. W. Wagner, district engineer of the Atchison, Topeka & Santa Fe at La Junta, Colo., has been promoted to chief engineer of the eastern lines, with headquarters at Topeka, Kan., succeeding R. A. Rutledge. Mr. Rutledge has been transferred to La Junta as district engineer on account of ill health.

H. A. Macbeth, division master mechanic of the New York, Chicago & St. Louis, at Conneaut, Ohio, has been appointed assistant superintendent of motive power, with headquarters at Cleveland, and T. W. Coe, master mechanic of the Indiana Harbor Belt at Gibson, Ind., has been appointed master mechanic of the Nickel Plate at Conneaut, succeeding Mr. Macbeth.

F. Hodapp, road foreman of engines of the Baltimore & Ohio, at Flora, Ill., has been appointed supervisor of locomotive operation, Southwest district, with headquarters at Cincinnati, Ohio; B. F. Crolley, supervisor of locomotive operation at Cincinnati, has been relieved of jurisdiction over Southwest district, to assume position as supervisor of locomotive operation on Northwest district, with headquarters at Cincinnati; T. B. Burgess has been appointed supervisor of locomotive operation of the West Virginia district, with headquarters at Wheeling, W. Va., vice T. K. Faherty, transferred; C. H. Creager, road foreman of engines at Cincinnati, succeeds Mr. Hodapp; J. M. Mendall has been appointed road foreman of engines, with office at Cincinnati, vice Mr. Creager; M. K. Walsh has been appointed road foreman of engines, with office at Benwood Junction, W. Va., vice W. F. Ross, deceased; and J. G. Kircher has been appointed road foreman of engines, with office at Parkersburg, W. Va., vice E. J. Langhurst, transferred.

A. C. Deverell, superintendent of motive power of the Great Northern, with headquarters at St. Paul, Minn., has been given entire jurisdiction over the mechanical department. R. D. Hawkins, superintendent of motive power at St. Paul with jurisdiction over part of the mechanical department, having been given an indefinite leave of absence to enter the Russian Railway Service Corps, William Kelly, assistant superintendent of motive power at Spokane, Wash., has been transferred to St. Paul. Henry Yoerg, mechanical engineer, has been appointed assistant superintendent of motive power, with headquarters at St. Paul. W. R. Wood, mechanical valuation engineer, has been appointed mechanical engineer, with office at St. Paul, in place of Mr. Yoerg. J. J. Dowling, master mechanic at Delta, Wash., has been appointed general master mechanic of the central district, with office at Great Falls, Mont., vice M. J. Flanigan, promoted, to superintendent at Whitefish, Mont. T. J. Clark, master mechanic at Spokane, has been appointed general master mechanic of the western district, with the same headquarters, succeeding William Kelly, promoted. All changes were effective October 20.

R. H. Pinkham, division engineer of the Renovo division of the Pennsylvania Railroad at Erie, Pa., has been appointed division engineer of the Pittsburgh division; John Atlee, supervisor of the Pittsburgh division at East Liberty, has been promoted to division engineer of the Renovo division; G. W. Snyder, principal assistant engineer of the Western Pennsylvania division at Pittsburgh, has been appointed assistant engineer of maintenance of way to succeed G. C. Koons; W. T. Covert, division engineer of the Philadelphia Terminal division, has been promoted to principal assistant engineer of the Western Pennsylvania division, with office at Pittsburgh; C. E. Brinser, division engineer of the Middle division at Altoona, has been promoted to division engineer of the Philadelphia Terminal division; A. W. McClellan, division engineer of the Williamsport division at Williamsport, has been promoted to division engineer of the Middle division; Robert C. Faries, division engineer of the Elmira division at Elmira, N. Y., has been promoted to division engineer of the Williamsport division; C. M. Wisman, supervisor of the New York division at Trenton, N. Y., has been promoted to division engineer of the Elmira division; J. C. Hackenberg, division engineer of the Allegheny division at Oil City, Pa., has been promoted to division engineer of the Maryland division, with office at Wilmington, Del., to succeed Division Engineer J. R. McGraw, who was granted a leave of absence, and E. G. Ayars, supervisor of the Baltimore division at Bowie, Md., has been promoted to division engineer of the Allegheny division. Effective October 25.

Purchasing

A. L. Cochrane, general storekeeper of the Denver & Salt Lake at Denver, Colo., has been appointed purchasing agent and storekeeper, vice C. N. Davids, resigned.

H. A. Anderson, special agent in the purchasing department of the Pennsylvania Railroad at Philadelphia, Pa., has been promoted to assistant purchasing agent; B. P. Phillippe, coal agent in the purchasing department, has been promoted to assistant to purchasing agent, and D. T. Jones, stationer, has been promoted to assistant to purchasing agent.

Railway Officers in Military Service

M. F. MacLaren, superintendent of the La Crosse division of the Chicago, Burlington & Quincy, at La Crosse, Wis., has joined the Russian Railway Service Corps.

George H. Emerson, general manager of the Great Northern at St. Paul, Minn., has been called by the Government to take charge of the Russian Railway Service corps.

R. D. Hawkins, superintendent of motive power of the Great Northern, at St. Paul, Minn., has been granted an indefinite leave of absence to enter the Russian Railway Service corps.

M. C. Kennedy, president of the Cumberland Valley at Chambersburg, Pa.; J. A. McCrea, general manager of the Long Island at New York, and the following officers of the Pennsylvania Railroad at Philadelphia, Pa., have been granted leave of absence in order to join the American expeditionary forces in Europe: H. C. Booz, assistant chief engineer; C. M. Bunting, controller; W. H. Farraday, assistant purchasing agent, and I. A. Miller, chief accountant in the general manager's office.

OBITUARY

L. D. Heusner, assistant general passenger agent of the Michigan Central at Detroit, Mich., died at his home in that city on October 17.

J. A. Williamson, district passenger agent of the Baltimore & Ohio at Toledo, Ohio, died at that city on October 15, as the result of an automobile accident.

E. E. Mote, manager of the Pacific Car Demurrage Bureau, died at his home in San Francisco, Cal., on October 19. Mr. Mote was one of the most prominent men in the demurrage field, in which field he began his work several years ago at Kansas City, Mo. He was president of the American Association of Demurrage Officers in 1912 and 1913. As the chief agent in the administration of demurrage affairs in California he has been influential in one of the most important recent reforms in freight car service, namely, the introduction and promotion of the high rate ($6 per car per day for two years, 1909-1911, and $3 since 1911), by which delays and misuse of cars have been greatly reduced. Only a few weeks ago he issued a circular appealing for efficiency under war conditions, and containing a strong argument against the use of the "average agreement" in charging for delays to freight cars. He cited statistics to support his contentions. He had the satisfaction of seeing the three-dollar rate put in effect in New Mexico last year, and later in Colorado.